U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-297 899

Evaluation of an Injury Reporting and Information System for the Solid Waste Industry. Volume I

Safety Sciences, San Diego, CA

Prepared for

Environmental Protection Agency, Washington, DC Office of Solid Waste

Feb 79

BIBLIOGRAPHIC INFORMATION

PB-297 899

Evaluation of an Injury Reporting and Information System for the Solid Waste Industry. Volume I.

Feb 79

PERFORMER: Safety Sciences, San Diego, CA.
Contract EPA-68-03-0231

SPONSOR: Environmental Protection Agency, Washington, DC.
Office of Solid Waste.
EPA/530/SW169C.1
Final rept.

See also Volume 2, PB-297 900. Also available in set of 3 reports PC E17, PB-297 898-SET.

The report describes the successful operation of the injury reporting system. Section I covers the previous work completed prior to the full scale operations. Section II reviews the procedures used by the system including problems encountered and modifications effected. Section III reviews the results of the system and concludes that it is a cost effective service in demand by the solid waste management industry.

KEYWORDS: *Injuries, *Reporting, *Information systems, *Refuse disposal.

Available from the National Technical Information Service, Springfield, Va. 22161

PRICE CODE: PC A11/MF A01

United States
Environmental Protection
Agency

Office of Solid Waste
Washington DC 20460

February 1979
SW-169.1

Solid Waste

PB 297899

EPA

Evaluation of an Injury Reporting and Information System for the Solid Waste Industry

Volume I

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

EVALUATION OF AN INJURY REPORTING AND INFORMATION SYSTEM (IRIS)
FOR THE SOLID WASTE MANAGEMENT INDUSTRY

Final Report (Volume I)

This report (SW-169c.1) describes work performed
for the Office of Solid Waste under contract no. 68-03-0231
and is reproduced in three volumes as received from the contractor.
Volume I describes the background and development of IRIS,
volume II contains summaries of the data analyses,
and volume III lists the IRIS publications.
The findings should be attributed to the contractor
and not to the Office of Solid Waste.

U.S. ENVIRONMENTAL PROTECTION AGENCY

1979

This report was prepared by Safety Sciences, San Diego, California, under contract no. 68-03-0231.

Publication does not signify that the contents necessarily reflect the views and policies of the U.S. Environmental Protection Agency, nor does mention of commercial products constitute endorsement by the U.S. Government.

An environmental protection publication (SW-169c.1) in the solid waste management series.

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY viii

I. INTRODUCTION 1-1

1.1 Background 1-2
1.2 Pilot Study 1-2
1.3 Field Test 1-6
1.4 Need for Continuation of Injury Reporting and Information System 1-9

II. DEVELOPMENT OF IRIS 2-1

2.1 Selection of IRIS Users 2-1
2.2 Data Collection 2-9

2.2.1 Start-Up Data Collection 2-10
2.2.2 Injury and Time Lost and Direct Cost Data Collection 2-15
2.2.3 Employee Data Collection 2-21
2.2.4 Equipment Data Collection 2-23

2.3 Developing Computer Analyses 2-23

2.3.1 Insuring Consistency in Data 2-24
2.3.2 Preparing for Increased Data Base 2-25
2.3.3 Maximizing Efficiency 2-26
2.4.3 Determining Programming Needs 2-28

2.4 Field Test Data 2-34

III. CONCLUSION 3-1

3.1 Future Uses of IRIS Data 3-4

3.1.1 Unperformed Data Analyses Available with present Data Base 3-5
3.1.2 Availability of IRIS Reports to the Solid Waste Industry and Other Interested Persons 3-8

3.2 Limitations of IRIS Data 3-9

TABLE OF CONTENTS (Continued)

Page

3.2.1 Evaluating Two Personal Protective Equipment in Depth 3-10
3.2.2 Collecting "Fleet Accidents" 3-11
3.2.3 Analyzing Injury Rates by Activity 3-12
3.2.4 Analyzing Injury Rates by the Tons Collected Per Man 3-13
3.2.5 Analyzing Injury Rates by the Accident Site 3-14

3.3 Improving IRIS Data and Analyses 3-14

3.3.1 Updating Equipment Data 3-15
3.3.2 Further Developing the "Master" Program 3-16

3.4 Obtaining Additional Data on the Solid Waste Industry Independent of IRIS Data . . 3-17

3.4.1 Performing Study of Solid Waste Fatalities with State Worker's Compensation Data 3-17
3.4.2 Obtaining "Success Stories" From the Solid Waste Industry 3-19

3.5 Visits to the Continuing IRIS Users 3-20

BIBLIOGRAPHY

LIST OF FIGURES

Page

FIGURE 1 Distribution of IRIS Users by Employment Size 2-5

FIGURE 2 Geographical Distribution of IRIS Users 2-5

FIGURE 3 Map of IRIS Users 2-6

FIGURE 4 Distribution of IRIS Users by Type of Solid Waste Organization 2-7

FIGURE 5 Distribution of Divisions of IRIS Users 2-7

FIGURE 6 Distribution of IRIS Users by Point of Collection 2-8

FIGURE 7 Distribution of IRIS Users by Crew Size 2-8

FIGURE 8 Distribution of Type of Shift of IRIS Users 2-9

FIGURE 9 Eight Factor "Profile" 2-31

LIST OF EXHIBITS

		Page
EXHIBIT 1	Employee Information Form	E-1
EXHIBIT 2	Instructions for Employee Information Form	E-2
EXHIBIT 3	Equipment/Vehicle Information Form	E-8
EXHIBIT 4	Instructions for Equipment/Vehicle Information Form	E-9
EXHIBIT 5	Background Information Form	E-16
EXHIBIT 6	Workmen's Compensation and Leave Policy Form	E-32
EXHIBIT 7	Job Title by Organizational Unit Matrix	E-41
EXHIBIT 8	User Code and Standard Job Class Code Match List	E-42
EXHIBIT 9	List of Standard Job Classification Codes	E-43
EXHIBIT 10	Employee Data Update List	E-46
EXHIBIT 11	Job Class Basing Data	E-47
EXHIBIT 12	Lists of Equipment Type, Make, Types of Use and Maintenance Schedule Codes	E-48
EXHIBIT 13	Crew Type Basing Data	E-53
EXHIBIT 14	Protective Clothing Basing Data	E-55
EXHIBIT 15	Instructions for Phoning-in Injuries to IRIS	E-56
EXHIBIT 16	List of Types of Information to Report	E-57
EXHIBIT 17	Field Test Injury Report Form	E-59
EXHIBIT 18	Field Test Costs and Lost Time Data	E-67

LIST OF EXHIBITS (Continued)

		Page
EXHIBIT 19	Injury Log	E-70
EXHIBIT 20	Workdays Lost and Direct Costs Data Sheet	E-71
EXHIBIT 21	Injury Coding System	E-73
EXHIBIT 22	Injury Coding Form	E-134
EXHIBIT 23	IRIS Users Wage Continuation Benefits for On-the-Job Injuries	E-135
EXHIBIT 24	IRIS Equipment Data Update List	E-139

EXECUTIVE SUMMARY

This Final Report on Contract No. 68-03-0231 describes the successful operation of IRIS, the Injury Reporting and Information System for the solid waste management industry. IRIS is a continuation of an expanded full scale operation of the injury reporting system tested during the Field Test of this contract.

The need for comparable data in this high risk industry was demonstrated in the Pilot Study which concluded that no data was available which could be used to set priorities for injury reduction measures or to monitor their success. A concept was developed for a study in which data would be collected on injuries as they happen and employees during their employment. Its feasibility was proven in the Field Test of the injury reporting system with 15 participants.

IRIS was then put into full scale operation. Its goal was to get 100 users on-line reporting injuries by October 1976 and to have them on-line for a full year. Since December 1975 IRIS users have been reporting injuries (and associated time lost and direct costs, employee and equipment data) as the number of users increased from month-to-month until the goal of 100 users was met. During the period of December 1975 to September 1977 the data base compiled by IRIS totaled 10,000 solid waste collection and disposal injuries, 60 thousand days lost and

$3.5 million in direct costs. The exposure hours, or actual hours worked, represented 40 million man-hours of exposure and 1,515 user months of reporting.

The forms and procedures for IRIS were developed such that the IRIS users could complete the start-up and updating forms and could report data on injuries without on-site training by contractor staff. The forms and procedures used in IRIS are outlined in Section 2.2 of the Final Report.

A novel method of reporting injuries was used by IRIS. The IRIS users phoned-in their injuries to a central office. This method was highly successful and crucial in the immediate editing of the data as it comes in and in maintaining day-to-day contact with the users.

IRIS was developed to be a self-supporting system (beyond EPA support) that provided a needed safety service to its users. The IRIS users receive routine feedback in the form of individualized Quarterly Safety Management Reports (QSMR's). They provide each user with an analysis of their quarterly injury experience, comparing it with previous quarters and with other users. Their injury experience is also discussed in detail, highlighting their high and low injury areas, monitoring their progress and suggesting ways to help reduce their high injury areas. Familiarity with the operations and safey improvements in use at over 100 solid waste organizations is partly used in suggesting countermeasures that have proven to be effective in accident reduction. Once an accident reduction measure has been identified by IRIS, the safety professional is given aid to justify it to management in terms of accident reduction potential and cost effectiveness of implementation. Upon implementation, its actual accident reduction effectiveness can be monitored from quarter to quarter, and alterations to the countermeasure effected if necessary.

With a large data base, IRIS was able to make statistically valid comparisons of the different collection methods as well as determine overall accident trends for the solid waste industry. In addition to the QSMR's, IRIS presents industry news and findings in the form of four separate publications:

- Quarterly Accident Trends reports. A special safety topic is addressed each issue (e.g., container handling accidents, slips and falls, equipment related accidents, caught in packer accidents, etc.), and the data from all IRIS users are analyzed and discussed. Prevention methods are suggested for specific injury problems. One section of the Accident Trends report also deals with the industry trends for the quarter, as shown by IRIS data. However, with the introduction of the IRIS News and IRIS Newsflash, the Accident Trends discussion topics will be incorporated into these publications.

- Monthly IRIS News. These articles provide users with news of interest to the industry (e.g., proposed California refuse collection standards, what is the ANSI Z245.1-1975 standard on refuse collection equipment, incentive programs in use, a survey of the personal protective equipment IRIS users provide their employees, etc., and a calendar of solid waste events). In addition, the IRIS News is used to discuss industry safety findings in specific areas, developed from analyzing the IRIS data (e.g., injury rates by crew type, size and type of shift, analyses of injury reduction potential of several types of personal protective equipment, caught in packer accidents, etc.). It was first introduced April 1977 to present the findings to the IRIS users in a more timely manner and to allow more issues to present the findings.

- IRIS Newsflashes (at least four a year). They were developed to immediately notify users of serious accidents (e.g., an employee opening the tailgate of a container delivery truck at the landfill was struck by the tailgate and became a quadraplegic) in order to forewarn them. Suggested preventative measures are also given. In addition, if an alarming accident trend is noted in the incoming injuries (e.g., users that allow employees to pick up from both sides of the street at a time have a higher incidence of employees being struck by private vehicles), users are notified to take steps to prevent it at their organization. It was first introduced January 1977 to notify users of these severe accidents and alarming accident trends as soon as possible.

- Five Special Reports. In addition to the eight Accident Trends reports published within the contract period, five Special Reports on the effects of detailed operational differences (e.g., in equipment type, in crew type, in work force, in wage continuation policies, and in personal protective equipment worn by the employees) on injury rates were written to be distributed by EPA.

The findings on the solid waste industry's injury problems and their countermeasures are also supplied to national groups responsible for setting standards for equipment and work practices in the solid waste management industry and to EPA, to enable the agency to set priorities for and monitor programs of injury control as related to productivity and work practices. The demand for the findings on this industry was amply illustrated by the continual data requests from solid waste safety professionals and other interested groups.

The safety issues for the solid waste management industry have not been fully resolved either because of time limitations or data limitations and are described in Section III of this Report.

IRIS has already proven its effectiveness and desirability in that it is continuing on a reduced level for an additional year of injury reporting (October 1977 to September 1978) with the IRIS users paying for the bulk of the fee.* The ten continuing IRIS users represent 20% of the man-hours from the period of full EPA funding, and it is anticipated that an additional 2,000 injuries will be collected during this reporting period. With an additional year of IRIS publications, twelve additional issues of the IRIS News will allow the examination of twelve safety issues in the solid waste industry.

The recruiting of potential IRIS users continues. SAFETY SCIENCES personnel give speeches at national safety conferences for the solid waste industry concerning IRIS, and articles on IRIS are published in journals for the industry. Inquiries about IRIS are generated by the articles and are followed up by correspondence and contact by phone and in person.

---

*EPA awarded SAFETY SCIENCES partial funding for IRIS under Contract No. 68-01-4747 on January 1978.

I. INTRODUCTION

This is the Final Report on the continuation of Contract No. 68-03-0231, "Full Scale Operation and Use of an Injury Reporting and Analysis System for the Solid Waste Management Industry". Work on the contract started in mid-1975 and was performed by the SAFETY SCIENCES Division of WSA Inc. Project Officers for the U.S. Environmental Protection Agency were Mr. Sidney Wener and Ms. Martha Madison.

This report covers in Section I a brief discussion of the previous work by SAFETY SCIENCES leading to the Full Scale Operation and Use phase of the contract renamed IRIS, the Injury Reporting and Information System for the solid waste management industry. Section II reviews the procedures used in IRIS, including problems encountered and modifications effected, and Section III reviews the results of IRIS and concludes that IRIS is a cost-effective service in demand by the solid waste management industry.

Two other volumes accompany this Final Report. One, the Publications, contains all of the quarterly Accident Trends reports, a sample Quarterly Safety Management Report, the monthly IRIS News, the IRIS Newsflash, and the Special Reports. The second, the Data Analyses, presents the findings of the entire reporting period for injury rates and tabulations by various operational, employee, and accident characteristics.

1.1 BACKGROUND

There is abundant evidence that both the frequency and severity of injuries are very high in the solid waste management industry. The Bureau of Labor Statistics publishes annual tabulations of Injury Rates by Industry. For 1970, the last year in which municipal workers were included in this tabulation, the category "local government, refuse collection and disposal" had a higher injury frequency rate than any other industry shown. The most recent National Safety Council data, for 1975, show municipal refuse collection workers to have an injury frequency approximately eight times that of the national average for all industry. The economic cost of injuries is also large, with typical worker's compensation insurance rates being 10-20% of payroll for refuse collectors. In California, for example, the premium rate is $17.20/$100.00 of wages for refuse collection according to the Manual for Rules, Classification & Rates for Workmen's Compensation Insurance. This places refuse collection in the high-medium range of occupations. Roofing, for example, has one of the highest rates at $21.23/$100.00, while office workers have the lowest rate of $.41/$100.00.

1.2 PILOT STUDY

Recognizing the need for information on the injury problem that could be used as a basis for action, a contract

(CPE-70-114) was funded to perform "A Pilot Study in the Field of Occupational Health in the Solid Waste Management Industry" (referred to hereafter as the Pilot Study).

The Pilot Study was performed during the period June 1970 through June 1972. A final report* was submitted in 1973. The objective of the Pilot Study was to examine the feasibility of two approaches to an eventual larger scale study: (a) a retrospective approach in which existing records held by solid waste agencies on injuries that had occurred, and personnel that had been employed, in previous years would be used to give useful data on injuries; and (b) a prospective approach, in which a data collection system would be devised, and information on injuries would be collected during their employment. In order to cover a range of agency characteristics, the Pilot Study was conducted in six cities: Washington, D.C.; San Diego, California; Des Moines, Iowa; Birmingham, Alabama; Brookline, Massachusetts; and Inglewood, California. In addition to the six main municipal solid waste agencies studied, two private agencies were studied in detail and six others in less detail.

An examination of 3,500 injury records and 3,000 personnel files in the six cities was performed, and the conclusions reached were that:

---

*A Pilot Study in the Field of Occupational Health in the Solid Waste Management Industry. Final Report on Contract CPE-70-114, ENVIRO-MED, Inc., succeeded by SAFETY SCIENCES Division of WSA Inc., San Diego, California.

- There was no standard injury recording format consistent with the needs of accident prevention. The rationale and design of the injury reporting system were aimed at meeting legal and fiscal requirements, especially those for the administration of Worker's Compensation benefits, rather than to elicit information on the causes of injuries. Little attention was given in these records to the cause of the injury, because "fault" was not an issue in determining eligibility for Worker's Compensation. For similar reasons, there was no incentive for monitoring the reliability of records except to insure that the employee and the benefits were properly identified.

  Because the entire structure of the injury recording system was designed for purposes inconsistent for use in determining the causes of injuries, the available records could not be easily or reliably adapted for this use.

- Primary data on such essential injury factors as lost time, injury costs, and the exact nature of the injury were often never recorded or were recorded and stored in a multitude of offices and in such a piece-meal fashion as to make the data virtually unretrievable, even to those immediately involved.

- There was no means to compare the injury experience from agency to agency. The wide variety in what constituted an injury, in the time loss allowed, in the injury wage continuation policies, in the random choices made of which injuries and what data to record, and in other factors made comparisons of questionable value.

- The inadequate recording of injury data, the isolation of management from the records that were available, the lack of standardization required to make valid multi-city comparisons, and the lack of analyses of available records (especially those on cost data), meant that all but a few in solid waste management were unaware of the magnitude of their injury problem. It was common for management to hold the unsubstantiated view that their injury rate was not high, was comparable with other cities, and was essentially unavoidable.

It should be noted that these conclusions were reached in 1972 and based upon a review of records from 1971 and previous years, at which time OSHA regulations on recording injuries were not in effect. However, the conclusions are still, in general, valid, because most establishments use a surrogate, or Worker's Compensation form, in place of the OSHA 101 (Supplementary Record of Occupational Injuries and Illnesses), and the OSHA 101 itself is generally not completed in a way that can be compared from one establishment to another. One very useful feature of the OSHA regulations, however, is the OSHA 100 Log of Occupational Injuries and Illnesses that does now provide a simple way of determining the amount of time lost for each injury, for those establishments that are subject to OSHA regulations.

The injury records were also used to identify a list of factors related to injuries that could be used as the basis for an injury reporting and analysis system. The selection of factors was based upon the extent to which collecting information about the factor was expected to throw light on the causation of injury or on preventive measures, the availability of data on that factor, and the precision with which information on the factor could be recorded. After a process of trial and error, approximately 50 factors concerning each injury, and approximately 40 factors for each employee were selected.

The Pilot Study concluded that, while a retrospective study using existing records would not be feasible, a prospective system, in which solid waste agencies record and report data on injuries as they happen, would be feasible.

1.3 FIELD TEST

The Field Test had as its purpose to further define the concept of a study in which data would be collected on injuries as they happen and on employees during their employment and to translate the concept into a workable injury reporting and analysis system. The goals of the system were defined as supplying data (a) to line managements of solid waste agencies that would enable them to improve their safety awareness by providing valid comparisons with the performance of other agencies, and to identify, set priorities for, and evaluate injury reduction programs; (b) to national groups responsible for setting standards for equipment and work practices in the solid waste management industry; and (c) to EPA, to enable the agency to set priorities for and monitor programs of injury control as related to productivity and work practices. These goals required the development of a system in which solid waste management agencies, referred to as participants, feed information into a central office which analyzed the information and sent reports back to the participants. The need for a common system, using a central office, arose from the need to accumulate a sufficient volume of data for statistically valid conclusions to be drawn, and from the need to obtain data that was comparable from one solid waste agency to another, using consistent definitions and methods.

The system developed had several novel features:

- the injuries were analyzed in terms of factors specifically applicable to the solid waste management industry
- the factors selected allowed the identification of the relative hazards of various aspects of the work environment
- in order to compare various aspects of the work environment, exposure data (also referred to as basing data) were collected. These data included the man-hours at risk for various employee factors. For example, it is not enough to know what fraction of the injuries happened to collectors under age 20. It was also necessary to know how many man-hours were spent by collectors under age 20. The injury risk (injury rate per man-hour) could then be computed and used, for example, to compare the injury experience of different solid waste agencies for collectors in this same age group.

In order to collect this data, the system provided for acquiring data in three time frames. The first was at the time that a participant joined the system, when data was collected on all existing employees, all equipment, and certain key work practices (e.g., crew size, collection methods). The second was at a periodic updating of this data (monthly for employee information). The third was on each injury, as it occurred. Only the details of the injury needed to be collected, since data on the injured employee's age, experience, job class, etc. was already on file.

The Field Test of this system involved 15 participants. Initially, much of the data needed for start-up was collected through visits to participants by contractor staff. Visits were also paid to train participant staff in methods required for data collection and reporting. As the Field Test continued, forms and procedures were developed by which participants could collect start-up data without on-site visits by contractor personnel, and could report data on injuries without on-site training by contractor staff.

The forms and procedures developed in the Field Test were designed to meet the requirements of an Injury Reporting and Information System for the solid waste management industry (IRIS).

A variation in which injury information was telephoned to the central office, rather than sent on an Injury Report Form, was developed and tested with one participant. This variation proved to be highly successful, and was used in IRIS.

During the Field Test it was found that there was ample evidence of high demand for the type of information that could be provided by IRIS, since many types of organizations requested information from the contractor.

Successful operation of the system to provide analyzed data was demonstrated. Because the Field Test was primarily directed towards examining feasibility, it was not possible to generate a large amount of analyzed data that was immediately applicable. However, some significant findings were made. The injury reporting period covered August 1973 through June 1975 and collected over 2,000 injuries.

The conclusion reached as a result of the Field Test was that an injury reporting and analysis system was feasible and that there was a need for the information that would be generated.

1.4 NEED FOR CONTINUATION OF INJURY REPORTING AND INFORMATION SYSTEM

Once the feasibility of a nation-wide, centralized reporting system was established and that consistent and accurate injury, employee, equipment, and basing data were obtainable, the need for an expanded data base was self-evident. A large number of injuries and a variety of collection systems was necessary in order to perform in-depth analyses of the injury problems in the solid waste management industry that would be statistically valid.

With the expanding data base, IRIS could serve:

- To provide a service to its "users" in identifying their problem areas, comparing them with other users, and making recommendations for injury reduction measures. This would be effected in the form of Quarterly Safety Management Reports (QSMR's).
- To provide the industry with answers to safety questions that are not possible without a large data base (e.g., the effect on injury rates for various crew sizes, types of shift, types of equipment, types of collection, etc.). This would be effected in the form of quarterly Accident Trends reports and 5 Special Reports.
- To provide data to the Office of Solid Waste Management Programs to use in setting priorities for action, monitoring and evaluating progress in injury control, and relating recommendations on injury control to productivity and work practices.

- To provide data to individuals, solid waste organizations, state agencies, and national groups concerned with safety research and standards development for the solid waste industry.

IRIS would also be a cost effective service to its users such that it will be self-supporting and in demand by the solid waste management industry at the end of EPA funding (September 1977).

II. DEVELOPMENT OF IRIS

This section of the report describes the processes used in IRIS to refine and formalize the procedures and concepts developed during the Field Test for starting up, obtaining and analyzing the data (includes injury, time lost and direct cost, employee, equipment, exposure hours and background data).

2.1 Selection of IRIS Users

A maximum of 100 users was decided to be optimum use of IRIS, in representing the various solid waste agency types and functions, in obtaining a large data base, in being small enough for SAFETY SCIENCES to provide individualized attention, and in keeping the operating costs feasible for EPA.

IRIS was fully operational, after improvements to the Field Test collection and analyses methods, in December 1975 at which time there were 11 users reporting injuries. An interim period of nearly a year was allowed to recruit the 100 users. To solicit and bring on line the 100 users by October, 1976 (in order to have a 12 month, maximum user input), EPA's Project Officers as well as SAFETY SCIENCES personnel contacted individual solid waste agencies, made presentations on IRIS at regional and national solid waste conferences, and published articles on the availability and usefulness of IRIS in solid waste magazines. A listing of the speeches and articles on IRIS appear in the Bibliography following Section III of this report.

The goal of obtaining 100 users who intended to come "on-line" was met by the beginning of October, when the number of IRIS users nearly doubled from the previous quarter. Prior to October, the number of IRIS users was also increasing from month to month. However, by the end of 1976, only 89 users actually were on line, and they represented nearly 20,000 employees. For a number of users, the reason they did not follow through on their intention to begin reporting injuries to IRIS was that they had personnel changes and were too disorganized to retrain the new personnel on the IRIS reporting procedures. (The users that were on line included six of the Field Test participants who rejoined IRIS once funding resumed.)

Total IRIS participation spanned 1,515 user months, including the Field Test, and 11,000 injuries were gathered. The total man-hours of exposure exceeded 40 million for just the continuation phase of IRIS from December 1975 through September 1977. In addition, the time lost and direct costs of the injury data base collected by IRIS exceeded 60 thousand days lost and $3.5 million. The participation periods of the IRIS users are given in the Bibliography at the end of Section III.

The IRIS users were fairly well distributed as to size of organization, geographic location, type of collection system, etc. FIGURES 1-8 give the summaries of the distribution of the IRIS users by the various operational factors for the number of users in each category and their percentage of man-hours of exposure, which account for how long they were on-line as well as how many employees they had. There was no attempt to "exclude" solid waste organizations whose operational factors were well represented by other users already on-line. This would have been awkward to effect, and besides, recruiting the users proved to be more difficult than anticipated.

Employment size (FIGURE 1). The best represented size group was the "201-500 employees" group, which had 20 users and included 42% of the total man-hours of exposure (from December 1975 to September 1977). The other size groups were also well represented for either number of establishments or percentage of man-hours of exposure.

Geographical distribution (FIGURE 2). The South had twice as many man-hours as other locations (43%), although the Midwest contained the most IRIS users (25). FIGURE 3 gives a dot gram of the geographical locations of the IRIS users. Four geographical sectors were distinguished: the West, Midwest, South and Northeast.

Type (FIGURE 4). The private sector only contributed 2% of the total man-hours, even though 8 of the IRIS users were private solid waste organizations. The private organizations tended to be small commercial operations.

Division (FIGURE 5). All functions of solid waste collection and disposal were included in IRIS, including the divisions of administration, street cleaning, and equipment maintenance. However, the residential collection division contained by far the greatest man-hours of exposure (57%), as would be expected. Thirteen separate functions were identified by IRIS.

Point of Collection (FIGURE 6). The majority of the man-hours of exposure (64%) fell under "curbside and alley". Backyard collection only represented 14% of the residential collection crew man-hours. This reflects the collection trends of the nation, since several IRIS users converted to curbside collection while they were in IRIS. Another 22% of the man-hours represented the residential collection crews that provided a combination of points of collection for each crew (e.g. backyard and alley).

Crew size (FIGURE 7). The crew sizes ranged from one to five man crews, including the driver, and three man crews were the most common (52%).

Type of shift (FIGURE 8). The task, or incentive, shift system was more frequent among the IRIS users (68%) than the hourly shift (32%). In addition, a particular user may have both task and hourly employees. For instance, their street cleaning employees may have been on an hourly shift while their collectors were on a task shift.

FIGURE 1

DISTRIBUTION OF IRIS USERS BY EMPLOYEMENT SIZE

Employment Size	No.	Man-Hours of Exposure	Percent of Total Man-Hours
1-50 EMPLOYEES	27	2,001,152	5%
51-100 EMPLOYEES	21	2,737,719	7%
101-200 EMPLOYEES	14	4,434,060	11%
201-500 EMPLOYEES	20	16,659,497	42%
>500 EMPLOYEES	7	13,586,244	34%

FIGURE 2

GEOGRAPHICAL DISTRIBUTION OF IRIS USERS

Location	No.	Man-Hours of Exposure	Percent of Total Man-Hours
West	22	6,884,572	17%
Northwest	4	1,634,531	4%
Midwest	25	7,089,965	18%
South	22	17,008,018	43%
Northeast	16	6,801,596	17%

FIGURE 3

MAP OF IRIS USERS

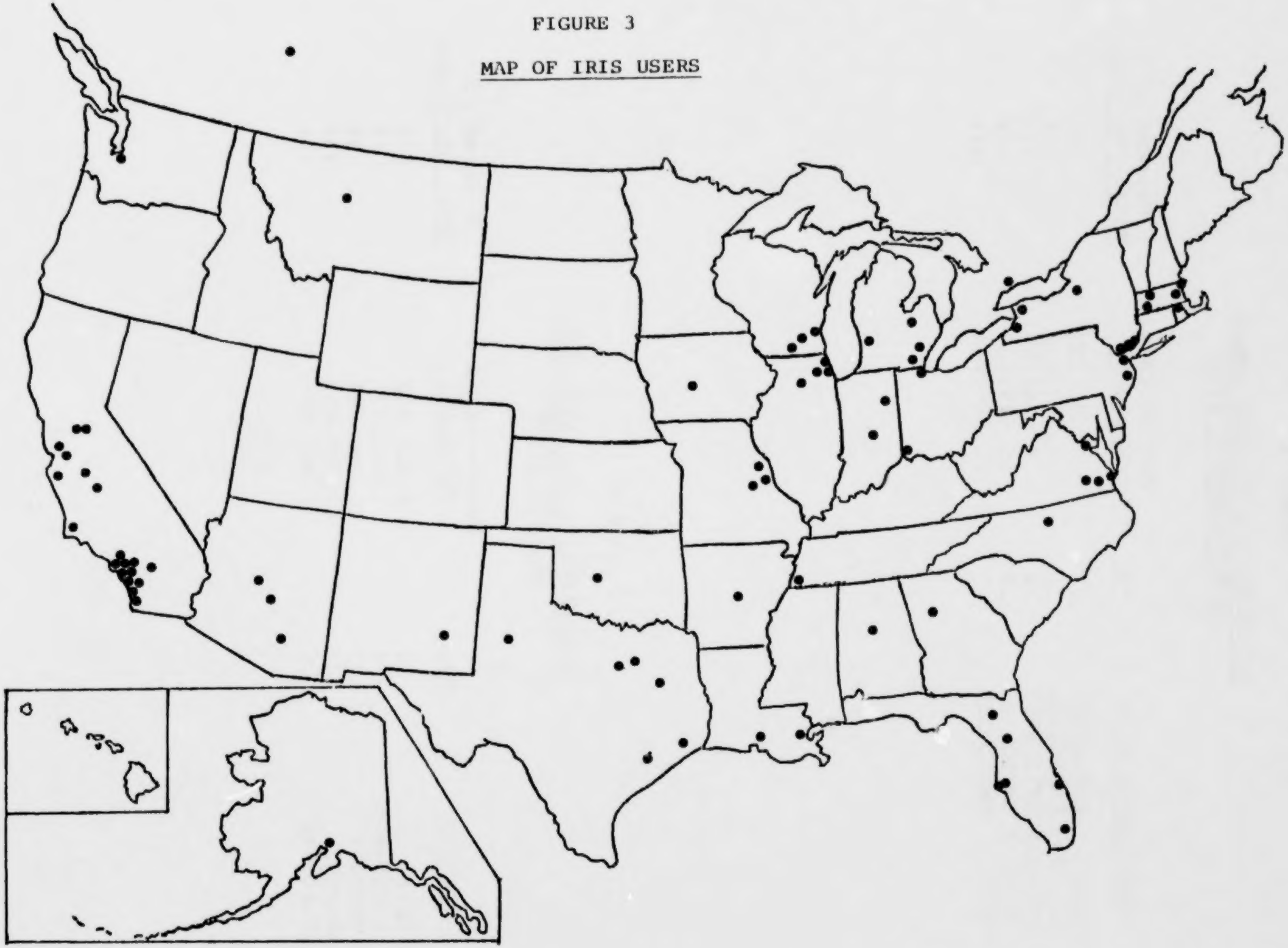


FIGURE 4

DISTRIBUTION OF IRIS USERS TYPE OF SOLID WASTE ORGANIZATION

Type	No.	Man-Hours of Exposure	Percent of Total Man-Hours
Private	8	596,691	2%
Municipal	81	38,821,981	98%

FIGURE 5

DISTRIBUTION OF DIVISIONS OF IRIS USERS

Division	Man-Hours of Exposure	Percent of Total Man-Hours
Residential Collection	21,417,024	57%
Residential & Commercial Collection	6,667,339	18%
Commercial Collection	1,248,705	3%
Disposal	2,682,993	7%
Landfill	1,726,114	5%
Incinerator	736,342	2%
Transfer Station	220,537	<1%
Administration	1,477,503	4%
Street Cleaning	2,755,468	7%
Weed & Litter Control	423,373	1%
Equipment Maintenance	722,494	2%
Container Maintenance	17,002	<1%
Miscellaneous Services	215,151	<1%
Recyling Operations	8,991	<1%

FIGURE 6

DISTRIBUTION OF IRIS USERS BY POINT OF COLLECTION

	Man-Hours of Exposure	Percent of Total Man-Hours
Curbside and Alley	9,974,156	64%
Backyard without Intermediate Container	376,107	2%
Backyard with Tub	287,724	2%
Backyard with Wheeled Cart	1,374,140	9%
Backyard with Tub/ Backyard with Wheeled Cart	117,530	<1%
Other Combinations	3,513,724	22%

FIGURE 7

DISTRIBUTION OF IRIS USERS BY CREW SIZE

Crew Size	Man-Hours of Exposure	Percent of Total Man-Hours
One Man	1,659,080	9%
Two Man	3,630,080	19%
Three Man	9,604,900	52%
Four Man	2,039,830	11%
Five Man	1,552,140	8%

FIGURE 8

DISTRIBUTION OF TYPE OF SHIFT OF IRIS USERS

	No.*	Man-Hours of Exposure	Percent of Total Man-Hours
Task	64	12,760,100	68%
Hourly	34	5,887,920	32%

*A user can have both hourly and task collection employees.

2.2 Data Collection

A number of detailed information was gathered by IRIS, and they were of two types, descriptive (e.g., injury, time lost and direct cost, employee data, equipment data) and "basing data" or man-hours of exposure data (e.g., job class basing data, crew type basing data, equipment basing data). It was obtained in two phases. The start-up phase included obtaining background information on the user and data on all their employees on the payroll and equipment in use at the time of starting to report injuries. The user was also given instructions on how to report an injury and what types of information to include in the injury description. The on-line phase included periodically updating the employee, equipment, time lost and direct cost, and background information received previously and the daily reporting of injuries. As in the Field Test, the data was identified by means of numerical user codes to keep IRIS user identities confidential in reports.

2.2.1 Start-up Data Collection

Upon an organization sending a "letter of intent", they were assigned an IRIS user number of three digits randomly. Data stored in the computer and in files were organized by user numbers. (However, a recent poll taken by IRIS at the request of some users to reveal their identities received affirmatives from 75% of the users. A list of users that responded "yes" and their corresponding IRIS numbers were sent to users. However, user identities are still not revealed in any reports unless by express permission.)

A package of forms had to be completed by a new IRIS user before their injuries can be entered on the computer. Four types of data were requested:

1. Employee Information Forms (EIF's) to be completed for each employee included in IRIS. For instance, an organization may decide to only include their residential collection division. Information requested included date of birth, date of hire, job classification, height, weight, education, employment status, division and district (EXHIBIT 1). An instructional sheet was included in the package to recommend several methods of completion (e.g., completed by personnel department from personnel folders, by employees, or obtained from available computer printouts) (EXHIBIT 2).

2. Equipment/Vehicle Information Forms (EVIF's) to be completed on each piece of vehicle or equipment in use by the divisions included in IRIS. Equipment information requested included equipment number (assigned consecutive numbers if none), type, chassis description, packer description, date of purchase, maintenance schedule and usage (EXHIBIT 3). An instructional sheet accompanied the forms (EXHIBIT 4).
3. Background Information Form on how their sanitation department was organized in terms of IRIS contact persons, organizational make-up, collection and disposal operations, job class descriptions, safety program, and size and names of divisions included in IRIS (EXHIBIT 5).
4. Workmen's Compensation and Injury Leave Policy form to describe their wage continuation benefits for on-the-job injuries (EXHIBIT 6).

When the EIF's from a user were received, they were checked for consistency and completeness. A Job Title by Organizational Unit Matrix form (EXHIBIT 7) and a User Code and Standard Job Class Code Match List (EXHIBIT 8) were completed to denote the user's organizational structure and index their job class titles with IRIS standard job class titles. IRIS standard job class titles (EXHIBIT 9) were developed to correlate the identical tasks of employees at all users in spite of their different job class titles. In many instances, numerous calls were made to clarify the job classes. In cases where the employees completed their EIF's, the data given was often incomplete and inconsistent since they often did not know their actual job titles or date of hire. Missing data were followed up on until they were obtained. Once the EIF data was entered, an Employee Data Update List (EXHIBIT 10) was sent immediately to the user to correct and update for the rest of the quarter.

Once the Job Title by Organizational Unit Matrix was completed on a user, a completed Job Class Basing Data Form was needed for each job class in each division (EXHIBIT 11). They were sent out to the users to obtain man-hours of exposure by individual IRIS user job classifications.

The EVIF's were checked and coded for type of equipment make, type of use and maintenance schedule. (See EXHIBIT 12 for list of codes.) Because of the amount of detail requested on these forms and an organization's often inadequate vehicle information files, they were often incomplete and were returned to IRIS after a longer period of time than other forms.

Crew type basing data was also obtained at the beginning of a user's participation by means of the telephone. The trained SAFETY SCIENCES personnel usually interviewed a foreman to obtain the data. The Crew Type Basing Data form (EXHIBIT 13) was completed by the interviewer simultaneously with the call. The form, however, was not used until October, 1976, when the majority of the users came on line, and, therefore, crew type man-hours of exposure were not computed for previous time periods. The updating system was recently developed to accomodate changes in the number of crews as well as the size and type of collection. Again, this was obtained by telephone. However, plans for the future are to obtain it quarterly by mail.

The Protective Clothing Basing Data (EXHIBIT 14) was another piece of background data that was obtained from the users by telephoning. It was felt that to obtain everything through the mail would overwhelm the users with paperwork. Therefore, some data was obtained by telephoning, and the information requested paced such that they did not receive all data requests at once.

Once a user set a start-up date for reporting injuries (the first of a month), the designated IRIS Coordinator at the organization was sent a number of Instructions for Phoning-In Injuries to IRIS sheets (EXHIBIT 15) and List of Types of Information to Report forms (EXHIBIT 16) to prepare the person(s) reporting injuries. The person(s) was also contacted by telephone to insure that the reporting procedure was understood. In the majority of the users, the person reporting injuries at the organization was a personnel clerk either in the personnel or safety department. They were urged to report the injuries as soon after occurrence as possible. More useful information came from the users who had their safety person or foremen phone in the injuries because they often had first-hand knowledge of the injury and could answer questions #24 and 25, which dealt with accident causation and preventative measures taken. However, with users that had the supervisors or foremen phone in the injuries, often there was a discepancy in numbers when the IRIS quarterly injury totals were compared with the user's quarterly injury totals.

In order to allow the users to come "on-line", or reporting injuries, as soon as possible, the users were not required to complete the start-up data before the start-up date. This was possible because it was expedient but not essential that the data be entered and analyzed before the end of the reporting quarter. Therefore, for a user that had not returned their employee or equipment data, injuries could be reported and coded, but not entered until their start-up data was entered. (The injury file in the computer was set up such that an injury could not be entered unless the employee data was on file already. The equipment numbers were also linked in this manner originally but was found to be too cumbersome.)

Unlike the Field Test, IRIS was set up to require no personal visits in order to reduce operating costs as well as SAFETY SCIENCES' personnel time. Procedures for the start-up data collection during the Field Test required a minimum of two visits to the organization. The first visit was to convince the organization to participate and to get an overall view of their organizational structure in order to estimate the best procedure to obtain the data the time required. The forms to be completed were then individualized for each organization at the SAFETY SCIENCES office. The second trip required a SAFETY SCIENCES staff person to arrive and complete the required forms. Local temporary help was usually obtained for larger organizations. The SAFETY SCIENCES staff person also interviewed the appropriate person(s) to obtain specific background data (no forms were used). The injury reports were then individualized for each organization before an organization came "on-line".

2.2.2 Injury and Time Lost and Direct Cost Data Collection

IRIS was specially equipped to receive injuries. Two telephone lines at SAFETY SCIENCES were set aside to solely receive injuries. Two other telephone lines were also installed for IRIS personnel to make out-going calls and for users to call back on. Personnel shift hours were also rearranged so that two trained persons were always available to receive injuries between the hours of 7 a.m. and 5 p.m. (An average of 30 injuries a day were received, and often, both injury receiving lines were in use.) Also, although only two telephone recorders were used, a minimum of three persons in the office were trained to receive injuries, to allow for a back-up person. Training IRIS personnel to receive injuries included having them listen to actual injury interviews and providing detailed explanations of the forms used in the injury coding system. Feedback on how well they received injuries was effected through the coder who has to transform the tapes into numerical codes that can be entered into the computer. He informed them when data was missing.

Only IRIS personnel answer the injury incoming telephone lines. This allows immediate contact between the user and IRIS in order to shorten the length of time for reporting injuries, especially since the users were required to finance the long-distance injury calls. A delaying problem encountered previous to this arrangement was the SAFETY SCIENCES receptionist obtaining the caller's purpose and putting the person on hold until an appropriate IRIS person was located and informed of the caller's intention. The four IRIS telephone lines were answered with, "IRIS Central Office".

SAFETY SCIENCES personnel hours were also shifted to allow for inputting at night and on weekends, thus optimally using the available computer time. This freed the computer for data analyses and editing during the day and allowed printouts to be run at night. Some programs that required lengthy computations were run on "background" or at night when more computer lines were available.

The injury reporting during the majority of the Field Test period involved multiple-choice forms that were individualized for each user (EXHIBIT 17). A unique number for each injury report form was stamped on every page at IRIS, and a log kept of the sequence numbers in use. Again, organizations were given code-identifying numbers. Each organization was sent an initial number of injury report forms (proportional to their size) when they started reporting injuries. Additional forms were furnished upon request. As the forms were completed, they were mailed to IRIS and logged in as being received. Trained IRIS personnel reviewed the forms for completeness and understandability, correcting where necessary. Each injury report form also contained a section for the completer to give a written description of the accident. If questions arose, the person who completed the form was contacted by telephone. Upon receiving the injury report form, the injuried employee's name, his social security number, and the date of the injury was entered on the Costs and Lost Time Data form and sent to the organization for completion (EXHIBIT 18).

The present telephonic injury reporting system was conceived and tested with a user at the close of the Field Test and found to be very effective in terms of obtaining complete and detailed injury descriptions. However, the first method tried was not feasible because the length of time required for the trained operator to ask the questions and to code the forms at the same time was too lengthy and involved. The other alternative rejected was having the coder enter the data directly into a video screened computer terminal during the question-and-answer injury reporting interview. This again required too much time, approximately 10 minutes per injury. In addition, it required the operator to be able to recall the injury data codes instantaneously and accurately. Therefore, the final solution chosen was to tape record the injury interviews and require SAFETY SCIENCES personnel to complete minimal data, allowing them to concentrate on the completeness and consistency of the injury descriptions. This method reduced the injury reporting time to approximately two minutes per injury. Since the IRIS users had to pay for the telephone costs for reporting injuries, it was vital to reduce the time to a minimum.

Upon receiving an injury call, the tape recorder was turned on immediately. The trained IRIS operator, as well as the contact person reporting injuries, looked at the List of Types of Information to Report (EXHIBIT 15) during the injury interview to insure that all necessary injury data were given. The only form the IRIS operator completed was the injury log (EXHIBIT 19) for keeping track of incoming injuries. This log was deemed necessary for the occasional problems that arose (e.g., tape garbled) after the calls.

The logs from the two tape recorders were used to keep a daily count of the number of injuries reported and to transfer the name, social security number and date of injury onto Workdays Lost and Direct Costs Data Sheets (EXHIBIT 20). The logs were also used to verify the taped injuries as they were being translated into numerical codes onto the injury coding forms.

The injury description coding system (EXHIBIT 21) was reviewed at the end of the Field Test. The narrative descriptions were evaluated for adding new codes to reduce information coded as "other", for ease of data access (e.g., multiple levels of descriptive detail, for causal factor relationships (e.g., expanding accident type categories to include some accident sequences such as "slipped and struck against vehicle"), and for adding additional data requests (e.g., detailed crew type descriptions).

The coded injury forms also had the narrative descriptions of the injuries on them, which were reviewed to check for coding consistency and errors (EXHIBIT 22). Injury trends and serious injuries were also flagged in this manner for the IRIS Newsflash publications.

Another form of injury editing was using a program which prints each injury description along with time lost and direct costs. This was reviewed for injury descriptions that "don't make sense". A computer edit program could pinpoint these errors since the numerical answers may be valid numbers. This printout could also be used for checking unusually large time lost or direct costs.

The injury recordkeeping systems at IRIS, because of the increased number of users, had to be reorganized. Confirming the number of injuries called in for the quarter was deemed necessary on a quarterly basis (by letter) to insure that all the user's injuries were phoned into IRIS. A list of names, social security numbers and dates of injury accompany the letter to facilitate this. A system also had to be devised to keep various stages of work separate at IRIS. A series of files were developed for each of the pieces of data, labelled with the stage of work. For instance, the injury files' bins were labelled "to be coded", "to be reviewed", "to be entered" and "to be filed".

Another area of confusion was keeping track of the time lost and direct costs data. The forms for the open cases as well as the newly opened cases were at first both being sent at the end of the quarter. As the quarters progressed, the volume of paperwork for users and IRIS personnel increased due to the increasing number of open cases. Therefore, sending them at staggered times was effected. The open cases from previous quarters were sent during mid-quarter while the cases that occurred during the quarter were sent at the end of the quarter. Any injuries for a quarter that were phoned-in after the end of the quarter were sent to the user immediately.

Confusion arose because not all cases for one quarter were sent at the same time, to expedite the user receiving the forms to complete. Therefore, sometimes the completers would add a few injuries (phoned in after the end of the quarter) onto the sheets sent to them, without informing IRIS. Also, the users were not sending all of the sheets back at the same time. To regulate these instances, a systematic procedure of separating open cases and newly opened cases was effected by color-coding the open cases with the appropriate quarter's color (e.g., yellow for first quarter, green for second, salmon for third, and blue for fourth) as well as numbering and xeroxing each page for the IRIS files. A special stamp was ordered to use on the pages. It allowed spaces for entering the dates of completion of the stages of processing of the time lost and direct cost sheets (e.g., date sent, date received).

The Workdays Lost and Direct Cost Data Sheets were requested to be sent back within a month, but due to the poor injury time lost and direct cost recordkeeping systems at IRIS users and the shortness of time available for receiving the direct costs, many users required an additional month to complete the forms. This of course delayed the computer analyses, in which the severity and direct costs contribute a prominent role. Some users waited to complete the sheets until they received computer printouts from their insurance carriers. Once IRIS received them, they were reviewed, called on and corrected before they could be entered. The IRIS Users Wage Continuation Policies chart (EXHIBIT 23) was used to confirm their policies.

2.2.3 Employee Data Collection

Since the man-hours of exposure for a user was computed on the basis of the number of active employees for a given time period, the employee data files necessarily had to be up-to-date and accurate.

As discussed in the "Start-Up Data Collection" (Section 2.2.1), once the employee data was collected, the users only needed to update the data. Updating the employee data required the use of two methods. EIF's were completed for newly-hired employees for which IRIS had no record. Updating of the data on file in the computer was accomplished by updating the Employee Data Update List (EXHIBIT 10). The update list was sent to the user assigned person each quarter. The completer used it to indicate a termination by crossing out the name and entering the termination date in the space provided. Job class changes, retirements, transfers, etc. were indicated in the same manner.

The person supplying the employee data kept track of it on a daily basis and sent the completed EIF's at least on a monthly basis to IRIS, but update lists were sent quarterly. They were sent two copies of the new update lists each quarter, one to make changes on during the quarter and the other to use during the interim period between sending the corrected update list to IRIS and receiving the new update list. Upon receiving the new update list, they transfered the information from the temporary list. New update lists were sent to them two weeks after IRIS received their altered list.

Several users developed legal problems with IRIS keeping names and social security numbers on file because of the Privacy Act.(1) Therefore, their employees were instead

---

1. Public Law 93-579 (Privacy Act of 1974), December 31, 1974.

identified by assigned numbers only, by converting the employee data on file, and the employees' identifications became totally unidentifiable in IRIS.

2.2.4 Equipment Data Collection

Equipment data is updated on a semi-annual basis, at which time each designated person received a computer generated Equipment Data Update List (EXHIBIT 24). They also received blank EVIF's (EXHIBIT 3) to complete for equipment numbers not listed on the update list. The update list was used to indicate when a piece of equipment was no longer in use by crossing out the equipment and entering a termination date.

2.3 Developing Computer Analyses of Data

The method of data analysis was altered from that of the Field Test to make the system more interactive. The Field Test used the ANSI-COBOL programming language that required keypunch cards. The keypunch cards were sent out to be keypunched, as this was quicker and cheaper. However, the volume of cards (16 per injury) and the lack of a means to monitor errors easily made this system burdensome.

The present system is BASIC language using a Hewlett-Packard 2000F computer on a time sharing basis. Access to the computer is immediate by means of computer terminals (e.g., CRT, printer) available at IRIS. The terminals are linked directly to the computer with special lines which eliminated the static being received over normal telephone lines. It does not require the use of keypunch cards. The data inputter has direct interaction with the computer, since the programs are written with a series of questions corresponding to questions on coding forms. The data can be modified as it is being entered.

2.3.1 Insuring Consistency in Data

Three means were developed to screen errors and two were performed by the computer. As discussed in the previous section, the first means was the manual checking of the data after it had been coded. In particular, the injury descriptions were carefully monitored for the consistent categorization of accident types and activities.

The second means of editing occurred as the data was being entered into the computer. Simple errors such as the number of digits for an entry was too large or too small, the numerical value was unacceptable (e.g., 24 for "last year of school completed"), a letter instead of number was entered, etc. could be immediately caught by the computer program, which simply rejects the entry. This form of editing was very useful for typographical errors but was limited in scope.

A series of "editing programs" were developed to identify conceptual as well as entry errors. For instance, the injury data editing program performed the data editing on two levels. The simpler level matched the entered codes against the "acceptable" codes on a separate file that contained all code numbers and their meanings. If a code that had been entered couldn't be found in the translation file, an error statement was printed. All error statements contained the IRIS user number, the employee identification number and the injury date, to facilitate locating the original form for correction. This level of editing could also have been performed as the data was being entered, but it would have increased the time required to enter the data.

The second level of error monitoring that the editing programs perform was to use "logic statements". They were written into the programs to check for very specific logic errors. For example, the injury data editing program checked that for the accident type of "overexertion", the nature of injury was "sprain/strain" and if a "slip" accident occurred, the nature was also "sprain/strain". Other editing programs check the entry and logic errors for the time lost and direct costs data, the employee data, and the equipment data.

2.3.2 Preparing for Increased Data Base

With the continually increasing data base, the original injury data files that were set up for the 11 users that began on December 1975 became inadequate. To handle a larger date base, the data files had to be converted into smaller units (i.e., the injury data files were reduced from quarterly to monthly files) because the time required for data entry also lengthened with increased file space. For instance, when an injury was entered into the computer, it was placed in date order on the monthly injury file (average of 1,000 injuries for the same months). If the file was long, it took more time for the computer to read through the file to the right position, particularly if the injury occurred at the end of the month.

The data analysis programs previously were only set up to compute numbers and injury rates by a given quarter for the QSMR's. However, it was also useful to compute them by more than one quarter and by more than one year. Therefore, all the data analysis programs had to be converted to be able to accept any beginning and end quarter time frame. In addition, upon the Field Test injuries being recoded and entered, the programs were further modified.

With the number of injuries, days lost, direct costs, and man-hours continually increasing, the maximum digits allowed for the totals on the printouts had to be expanded, particularly for computing more than one year's worth of data.

2.3.3 Maximizing Efficiency

The data entering, sorting and analyses programs were evaluated periodically to insure that they were optimally efficient. For instance, when the number of participants receiving the quarterly individualized reports doubled, the data analysis programs were converted to run continuously from one user to the next automatically by means of "data statements" containing the user numbers and to "log off" the system once the program finished. Before, each computer printout had to be recalled manually, therefore unnecessarily wasting personnel man-hours. With this improved method, computer printouts could be left to run all night, thus utilizing all available computer time as well as not tieing up the terminal during the day time. This was especially vital when running the individualized QSMR printouts which ranged from 800-1,300 printouts a quarter, depending on the number of users on-line for the quarter. Developing a self-generating system of printouts was also time consuming because of problems encountered in making it produce consistent margins on the top and bottom of the printouts (e.g., prints the title on the same line of the printout on each page, taking into account that for larger IRIS users, a second page may be required). Other computer printouts that this principle was applied to included the division and crew type programs where the divisions and crew type combinations that needed analyzing were put onto "data statements" and they could be generated continuously with the correct titles and precise margins.

To use the computer time more efficiently, the slow programs for computing man-hours of exposure and the data editing programs were converted to be able to compute on "background", or not tieing up a computer terminal that could otherwise be utilized to print or enter data. The editing programs, which need to print error statements, printed them onto a "scratch file" that was killed automatically when printed.

For programs that require man-hours of exposure computations (e.g., all programs that provide injury rates), the man-hours were computed by a separate program and placed in quarterly files. Therefore, they were always available for computing injury rates by any time frame. Separate exposure hours files were kept for the injury rates factors of division, job class, age, experience, height, weight, crew type, etc.

2.3.4 Determining Programming Needs

To fully utilize the injury, employee, and equipment data available, a multi-faceted data analysis system was developed that contained over 80 programs. The data analysis programs tabulate as well as compute injury rates by single and by multiple factors.

In achieving the goal of tabulating the frequency, days lost and direct costs for unlimited multiple factor combinations of the injury, employee and equipment data, a "master" program was developed. It required several stages of complexity. The injury, employee and equipment data specific to each injury was linked together into quarterly data files to be used by the program in order to shorten the data analyses time required.

In developing the "master" program, several conceptual and implemental problems had to be resolved:

- How to request a specific analysis. The procedure devised requires two parameters to be input, 1) the data group to be examined (e.g., all back strains that occurred to rear-end loader crews) and 2) the information to be printed in which order and with what connecting words. Each coded piece of injury, employee and equipment data can be requested.

- Sentence flow. The printout, in order to be coherent, needed the stringing together of the factors to be in "profile", or sentence form. This required alterations to the phraseology of the injury description coding system that were handled in two ways. First, the activity and accident type (injury description factors) and their subsets were worded as continuous phrases, eliminating the need for inputting connecting words. For instance, an accident type could be retrieved at three levels of detail, depending on the depth of analysis required. Each level was phrased such that the phrase flow was consistent and complete internally:

  1st level

  Overexertion

  2nd level

  Overexertion involving container
  Overexertion involving waste
  Overexertion involving object
  Overexertion involving vehicle part

  3rd level

  Overexertion involving/32 gal. container/which was unusually heavy (wet waste)

  The third level of detail actually represented three factors (separated by slashes), the accident type and two subsets that describe the container (or object, or waste, or vehicle part) and the container condition without the use of connecting words.

Secondly, standard connecting phrases (e.g., "employee was", "and" etc.) could be inserted between the injury description factors. For instance, an eight-factor tabulation (given below) is generally requested for detailed injury descriptions of the IRIS user's quarterly injuries, to aid in analyzing their injury problems (standard printout for Section I of the QSMR). Other IRIS reports, depending on the industry problems addressed, may require much more detail.

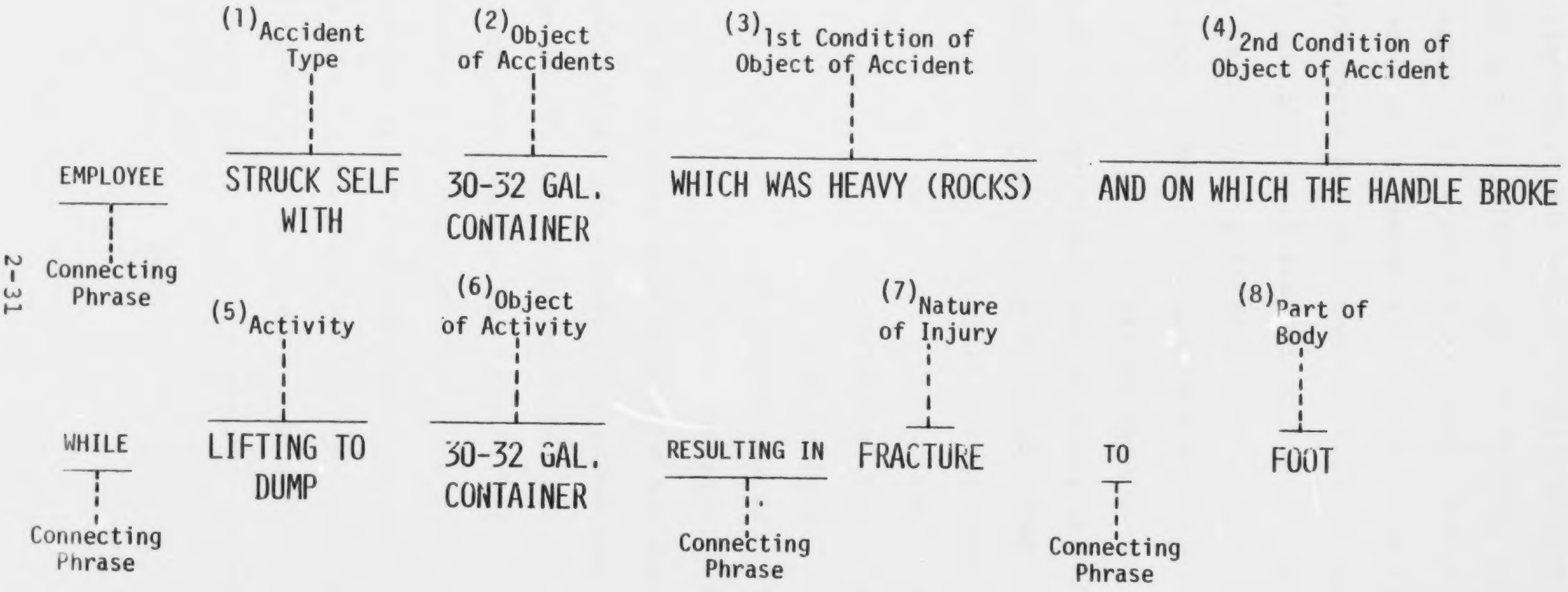
The example given is only utilizing the injury data, but employee data (e.g., age, height, experience, job class) as well as equipment data (e.g., type of equipment, sill, height, make of body, etc.) could have been requested, also.

- Allowing for exclusion. Another refinement of the program made it able to exclude certain injuries that satisfied one requirement but not another. For instance, it was possible to tabulate by the accident types that occurred to employees dumping a container into the hopper on a two man crew and exclude the accident types of "insect stings" and "animal bites" Therefore, it was possible to single out more relevant risk factors for the accident patterns being examined.

The "master" program was in essence developed to be self-programmable and as such can be used to test out ideas on causal factors. For instance, if one theorized that the majority of the back strains may occur while dumping into the hopper of a Heil rear loader, it could be tested immediately. (Due to the length of the file being read by the program and the number of factors being sorted, each printout could take 1 to 8 hours.) Virtually an unlimited number of safety issues could be resolved in this manner without having a computer programmer write a specific program for each test case. Only very structured four factor analyses (activity, accident type, part of body and nature

FIGURE 9

EIGHT FACTOR PROFILE


(1)Accident Type
(2)Object of Accidents
(3)1st Condition of Object of Accident
(4)2nd Condition of Object of Accident
EMPLOYEE
STRUCK SELF WITH
30-32 GAL. CONTAINER
WHICH WAS HEAVY (ROCKS)
AND ON WHICH THE HANDLE BROKE
Connecting Phrase
(5)Activity
(6)Object of Activity
(7)Nature of Injury
(8)Part of Body
WHILE
LIFTING TO DUMP
30-32 GAL. CONTAINER
RESULTING IN
FRACTURE
TO
FOOT
Connecting Phrase
Connecting Phrase
Connecting Phrase

of injury) were available during the Field Test.

The program was also modified to perform simple totalling (by any number of factors) at a faster rate. This was effected by bypassing its normal routine of setting up a separate scratch file to read from and programming it to only read the combined quarterly data files for the totals. With this method, simple totalling (e.g., number of "struck by objects ejected from the hopper" injuries) could be performed in one hour as opposed to six.

Concurrent with the development of the "master" program was the development of simple tabulation programs of several injury description factors:

- activity
- accident type
- part of body
- nature of injury
- accident site

They tabulated the number of OSHA recordable injuries, days lost and direct costs and ordered the factor categories from the highest to the lowest percentages. These were deemed necessary as standard features of the QSMR (later activity and accident type were only included) for identifying high risk accident patterns. These were written as separate programs not only because they were useful programs to have while MASTER was being developed but also because of limitations of the printouts from the "master" program.

Because of the already quite complex nature of the "master" program, it was decided that it would be mainly used as a tool in identifying very detailed risk factors rather than produce a perfect printout. (Besides, it would lengthen the analyses time required.) The numbers generated from the "master" printouts were generally transformed onto charts or tables or utilized in countermeasures discussions. What the program did not do, and which some individualized programs have been specifically written to compute, was:

- order the categories from the highest to the lowest number of injuries (all, OSHA recordable, or lost workday cases), days lost or direct costs
- compute percentages of the total
- compute injury rates
- give four quarter comparisons of accident type and activity category percentages and injury rates. Separate programs were written for this.
- compare individual user categories with those of the average for all users for accident type and activity. Separate programs were written for this.

Computing injury rates required the computation of man-hours of exposure (or basing data) by a specific factor or combination of factors. Two separate files were developed to contain basing hours for different employee, equipment and operational factors. One, the job class basing data file, which links the job class exposure hours to the employee data file, was used to compute man-hours of exposure by:

- age
- experience
- height
- weight
- user job classification (e.g., laborer)
- IRIS standard job classification (e.g., residential collector non-driver)
- division (e.g., commercial collection)

Secondly, the crew type basing data file was used to compute injury rates for any combination of the five components that made up the crew type:

1. type of collection (e.g., residential, brush)
2. point of collection (e.g., curbside, backyard with tub)
3. crew size
4. type of shift (e.g., task, fixed hour)
5. type of container (e.g., manual, bulk, etc.)

In addition, the crew type basing data file also contained the equipment type used by the crew.

The crew type and job class basing data files could not be combined into one file because the monitoring required to keep track of which employees were in which crews on a daily basis would be extremely time consuming.

2.4 Field Test Data

The coding systems for the injury as well as the employee data in IRIS were much more evolved than that of the

Field Test. In addition, the data was stored on computer tapes in a different programming language. Therefore, in order not to lose the valuable comparative data source of approximately 2,200 injuries gathered during the Field Test, they were recoded under the IRIS coding system for injury and time lost and direct cost data. However, it was not possible to correlate the employee or basing data that was obtained in the Field Test with the IRIS system because of the great improvement in the categorization of job classifications and crew types.

III. CONCLUSION

In the nearly five years of compilation of injury data (including 3 years of the Field Test) on the solid waste industry, IRIS (the Injury Reporting and Information System for the solid waste management industry) has met its fourfold goals of:

- Building a large data base of reliable, consistent, and detailed solid waste industry data. Since the Field Test began gathering injury data in 1973, 1,515 user months has produced a data base of over 11,000 injuries, 60,000 days lost, and $3.5 million in direct costs in solid waste collection and disposal. The data include not only injury descriptions and respective time lost and direct cost incurred but also such standardized basing, or man-hours of exposure, data as employee, equipment, crew type, and job classification. The total exposure hours collected exceeded 40 million.

- Providing routine feedback to its users. In the form of individually written Quarterly Safety Management Reports, IRIS has been able to routinely evaluate accident patterns at individual solid waste organizations. Each user's data is evaluated for quarterly injury trends, compared with the overall average, and compared with only users that have similar operations. Specific injury reduction measures are suggested for injury areas that IRIS has determined to be exceptionally higher than the average. The suggested injury reduction measures are chosen for their applicability and cost effective potential for the user, as proven by IRIS data or by the actual use of an injury reduction measure by a user. Line management is also given supportive data as to potential cost savings in implementing these measures. IRIS can serve the additional function of monitoring the progress of any operational changes that are implemented.

- Answering industry-wide safety questions. Because the IRIS data base is large and detailed it is able to provide comparative data on such solid waste industry safety issues as the effect on injury rates of equipment type, Worker's Compensation benefits, various collection systems, and personal protective equipment (in Special Reports) that have been only speculation in the past because of lack of data. In addition, this valuable source of data has not been fully utilized.

In addition to providing OSWMP with decision-making data, IRIS also routinely provides data to national groups involved with solid waste management and safety:

- National Solid Waste Management Association
- American Public Works Association
- Governmental Refuse Collection & Disposal Association
- International City Management Association
- National Safety Council
- American Federation of State & County Municipal Employees

The IRIS findings and data base have also been instrumental in providing information to other organizations who requested aid in resolving solid waste safety questions:

- Non-user solid waste organizations asked to be on the mailing list for the quarterly Accident Trends reports as well as the "IRIS News" and "IRIS Newsflash". Some organizations requested in depth questions which required special computer printouts (e.g., objects ejected from hopper accidents).

- Other solid waste research organizations such as university extention programs and private conculting firms (e.g., SCS Engineers) requested the IRIS publications.

- State governmental agencies requested data. For instance, the Educational Research Division in the State of Washington was interested in any data on training guidelines, as they wanted to set up a training program for the collectors. The California State Standards Board also requested data on the seriousness of the injury problem, as they were evaluating their refuse collection standards.

  - Equipment manufacturers were interested in equipment related injuries and equipment modifications adopted by the IRIS users.
  - Participating in a User Requirements Committee set up under a National Science Foundation contract directed towards the development of equipment standards for refuse collection.
  - The development of a safety manual for the solid waste industry by SAFETY SCIENCES under a contract from the National Science Foundation.
  - In the evaluation of a series of training films being developed on solid waste safety.

- Providing a cost-effective safety service to potential and continuing IRIS users. The operating cost of IRIS is approximately $3,000* per average user per year (200 employees). Based on IRIS data, the average direct cost per man-year is $169; thus a user with 200 employees spends an average of $33,800 in direct costs per year for on-the-job injuries. A reduction of only 15% in their injury rates, as a result of IRIS suggestions, would more than pay for the annual fee of IRIS. In fact ten IRIS users are continuing with IRIS, regardless of EPA funding. They represent over 20% of the peak of IRIS participation.

However, IRIS still requires evaluation. There are several immediately apparent data analyses needs and improvements to the system that should be considered. In addition, several ideas for how IRIS can further benefit the industry and its users are presented in this section.

---

*Approximately $1,000 more for starting up. These figures do not take into account OSWMP partially funding IRIS.

3.1 FUTURE USES OF IRIS DATA

One invaluable use of the IRIS data and the user contacts fostered has already been performed in the development of a comprehensive, hazards-linked-to-countermeasures safety manual for the solid waste industry. This was funded by the National Science Foundation under Contract No. NSF-C76-19132 and took two years to complete. Several IRIS users as well as OSWMP and national solid waste organizations were on the advisory committee for evaluating the safety manual.

The development of the safety manual could not have been possible without the preliminary research undergone by IRIS in identifying high risk factors involved in solid waste injuries and their corresponding injury reduction measures. In addition, the training guides, equipment modifications, container regulations, personal protective clothing effectiveness, and operational procedural alterations identified by IRIS as to their injury reduction potentials were extensively relied upon.

Several other vital services to the industry that can be accomplished through the existing IRIS data and publications include:

- Performing additional unresolved data analyses with the present data base of 11,000 injuries (will increase by an additional 2,000 injuries by the end of September 1978). Limitations of the present data base in performing certain analyses will be discussed in Section 4.2.
- Providing access to IRIS reports, past and future, to all interested solid waste organizations. Involves advertising in the mail.

3.1.1 Unperformed Data Analyses Available with Present Data Base

The existing data base contains detailed injury, employee, and equipment data. Many injury description factors and employee characteristics have been examined in the IRIS reports. (See accompanying Data Analyses and Publications volumes.) However, there are aslo several individual injury description factors and combinations of the injury, employee and equipment factors that have been identified by IRIS as worth pursuing. They were not performed within this contract because of time limitations and because some of them were identified after the completion of other data analyses. A few of the safety questions that can be answered with the existing programs or with the completion of new programs include obtaining injury rates for:

- Day of the week. The information was collected on each injury and the hours of exposure was collected as part of the crew type basing data. However, it would require the setting up of extensive monthly hours of exposure files for the day of the week (available from October 1976) and developing the computer program.
- Hour of the day. This analysis is identical to that of "day of the week" in development.
- Hours worked prior to accident. Again, the analysis for this undergoes the same steps as "day of the week".
- Overexertions (back strains) by hours worked prior. Once the hours worked prior exposure hours files are set up, to obtain this analysis would only require the writing of the computer program for a two factor injury rates analysis.

- Task/fixed hour slips and falls. This would require the alteration of the crew type analysis programs to sort by accident type.

- Container weight limits vs. overexertions involving container. This analysis would be performed manually since subjective evaluation is required to compare various weight limits as well as how well the weight limits are enforced. Existing programs can be used.

- Overexertions (back strains) by age and job classification (e.g., collector non-driver age 25-29 years). This would require complicated computations of man-hours of exposure and to be able to sort by three different factors.

- Safety shoe requirement vs. slips and falls. The "master" program can be used to provide the injury descriptions and numbers, but it again requires subjective evaluation as to the various groups of IRIS users (e.g., ones that require safety shoes, ones that recommend, and ones that have no safety shoe policies).

- Type of equipment and crew size (e.g., two man side loader crew vs. one man side loader crew) for equipment related injuries. This is already obtainable with existing computer programs but requires extensive computer runs and hand computations for the injury rates.

- Key accident types (e.g., struck by object ejected from the hopper) by the type of equipment. This is also available with existing programs.

- Experience of the employee vs. the activity being performed at the time of injury. This analysis would be of great aid in developing employee training programs since it would direct the emphasis towards accidents that frequently happen to inexperienced employees. In addition, needed retraining areas will be revealed for the experienced employees. The experience programs already sort by the accident type; therefore, minor alterations to the programs will make them sort by the activity, instead.

- Overexertions while handling containers or waste vs. the height and weight of the employees. This was previously performed in a Special Report with only the height or weight but not by all three combinations. It would require developing some computer programs for sorting the man-hours of exposure as well as the number of injuries, days lost and direct costs by the height and weight cross groupings.

- A discussion of vehicle malfunction accidents. This would be handled in the manner of an Accident Trends report, with mostly narrative. Since these accidents do not code well for all of the accident circumstances, the original injury description will be examined rather than the coded information. No additional computer program development is required.

- A discussion of the caught in packer injuries that occurred during the Field Test. Because of this accident type's severity, these injuries are of major interest and concern to the industry. Although this topic was already discussed in the first quarter 1977 Accident Trends report for the post Field Test data, it is felt that discussing all of these serious injuries in depth is necessary in understanding and preventing these injuries. Also, the original injury descriptions need to be referred to for additional detail. Another insight that can be gained from this report is in comparing the Field Test caught in packer injuries with the post Field Test injuries. Technological developments since 1973 may be a factor in their frequency.

It should be mentioned that eight additional issues of the monthly IRIS News and two additional issues of the IRIS Newsflash have been published since the end of the reporting period (September 1977). Their safety topics were not included on this list, and only four issues of the IRIS News and two issues of the IRIS Newsflash are left to be published before the completion of Contract No. 68-01-4747, in which EPA is funding the "core support" of IRIS for fiscal year 1978.

Therefore, to perform the outlined data analyses would require the continuation of IRIS beyond fiscal year 1978.

3.1.2 Availability of IRIS Reports to the Solid Waste Industry and Other Interested Persons

The wealth of already analyzed solid waste collection and disposal injury data published by IRIS (eight Accident Trends reports, six IRIS News, four IRIS Newsflashes, and five Special Reports during this contract period and an additional 12 issues of the IRIS News and four IRIS Newsflashes from the partial EPA funding phase, fiscal 1978) is only presently available to IRIS users, national solid waste organizations and EPA. The majority of solid waste organizations do not have access to the reports 1) because they were unaware of their existence even though IRIS has been discussed in solid waste magazines and at conferences and 2) because only the IRIS users were "priviledged" since by providing data to IRIS, they received the reports free as part of their feedback for participating.

However, the interesting and important findings as a result of IRIS should be available to the whole solid waste management industry, to provide maximum impact of the findings on the industry. EPA is only presently considering making the five special reports available to the industry, but the other IRIS reports also are of interest to the industry.

The most effective advertising of the IRIS publications, past and upcoming, is to mail out a brochure to all solid waste organizations that lists the topics of the various reports and describes some of the interesting findings. Space limitations in the length of magazine articles will restrict what is said concerning the IRIS publications and makes advertising in the solid waste magazines an inferior alternative means.

This task can be performed with minimum funding from EPA, since the solid waste organizations wishing to obtain the reports will pay for the cost of their reproduction and handling. Therefore, the only cost to EPA would be the development of the brochure, the compilation of the mailing list and the mailing of the brochures. The mailing list could be compiled from the mailing lists of solid waste magazines and other municipal organizations such as ICMA.

The benefits that could develop from such an effort would not only include informing solid waste organizations of the existence of detailed safety information for their industry but also:

- To provide high visibility in pioneering safety research in the solid waste industry for EPA's Office of Solid Waste Management Programs, and
- It can be a means to widely solicit additional IRIS users, therefore enlarging the data base.

3.2 LIMITATIONS OF IRIS DATA

In re-evaluating IRIS, in light of the analyses that has been performed and the analyses that has yet to be completed, there still emerges certain "gaps" in the understanding of solid waste injuries. These gaps were either not originally anticipated or were ommitted because of time limitations:

- Evaluating two personal protective equipment in depth
- Collecting "fleet accidents"
- Analyzing injury rates by activity
- Analyzing injury rates by the tons collected per man
- Analyzing injury rates by the accident site

All of these, however, cannot be performed retrospectively since the data is not available. They would require building an additional data base. With the present number of continuing users (ten users that represent 20% of the man-hours of the 89 users), another year of data can provide a minimum of an additional 2,000 injuries. This number would even be greater with the addition of the fleet accidents.

3.2.1 Evaluating Two Personal Protective Equipment in Depth

In analyzing the cost effectiveness and injury reduction potential of personal protective equipment as a Special Report, it was discovered that the IRIS data on two pieces of personal protective equipment was inadequate and should be revised in order to obtain more meaningful analyses.

For gloves, the material (e.g., canvas, suede, leather) and the length would need to be obtained in order to compare their injury reduction potential (e.g., leather gloves may result in 25% less cuts and punctures to the hands). The present injury reporting system only asks for whether or not gloves were worn. Injury reduction potential is linked directly to cost effectiveness. Therefore, to convince solid waste organizations to provide suede instead of the cheaper canvas gloves, or even to provide gloves at all, requires concrete data.

Safety shoes was another personal protective equipment that had a wide variety of types. In particular, the safety features that should be identified with the injury are ankle protection, steel toe, puncture protection, and metatarsal guard. (Slip resistance is a safety feature that is touted by the manufacturers, but no data are given to support the claims. Besides, a great variety of shoe sole materials and patterns abound that would be needed to be reported since they affect slip resistance as well as the degree of wear on the shoe sole.)

For both pieces of personal protective equipment, the hours of exposure data necessarily has to be kept up-to-date and in detail for the qualities identified.

3.2.2 Collecting "Fleet Accidents"

"Fleet accidents" are traffic accidents that result in property damage only. IRIS only accepted injuries, which limited the scope and, therefore, the costs of the study. However, the solid waste collection industry has a serious problem with fleet accidents, and to provide IRIS users with a more comprehensive analysis of their solid waste accidents, these costly property damage accidents should also be incorporated into IRIS.

This would entail modifications to the whole system of reporting, coding, entering and analysis, since these accidents will require specific vehicle movement questions such as the speed of the vehicle, whether it was making a turn, etc. In addition, IRIS will need to acquire some "typical" fleet accidents to test the system alterations before it becomes functional.

3.2.3 Analyzing Injury Rates by Activity

Activity, or task the employee was performing at the time of injury, can be based. The approximate number of times a certain activity (e.g., carrying container) is performed during the day and the relative time it takes can be estimated. The other accident description factors, for example accident type, cannot be based as to how many hours of exposure to a slip or a fall occurs in a day, since the same exposure hours can apply to an overexertion accident or an object in eye accident. The exposure hours for such factors as accident type, nature of injury and part of body are constant for each category.

Therefore, the unique feature in obtaining the exposure hours for individual activities is that specific employee training needs can be identified, since employee training is correlated directly to specific tasks such as lifting the container, operating the packing mechanism, etc. In addition, unusually high or low injury rates among users in a particular activity can aid in pinpointing causal factors such as operational differences.

However, obtaining the exposure hours by task is very lengthy and involved. Therefore, it necessarily has to be obtained by telephoning. In addition, collection system changes will require updating the activity basing data.

3.2.4 Analyzing Injury Rates by the Tons Collected Per Man

The majority of solid waste organizations maintain records on the tons collected per truck per day since the trucks are weighed and recorded when entering the disposal sites. Therefore, obtaining average tons collected per man per truck can be estimated relatively easily by knowing whether the employee only collects, only drives or drives and collects. The tonnage, however, varies from season to season and should be updated on a monthly basis.

The tons collected per man has a bearing on such accidents as overexertions and most likely increases fatigue. An analysis of the side loader crews indicated that their injury rates were much higher than rear loader crews, which are less productive, and the injury rates may be a reflection on tonnage.

3.2.5 Analyzing Injury Rates by the Accident Site

When obtaining the exposure hours data for activity, the exposure hours data for accident site would also become available. For example, in obtaining the exposure hours for the activity category of "driving", the data on how many times he goes to and from the landfill and how long it takes is obtained. This can be used for the accident site of "on roadway-to or from disposal site".

This analysis will locate IRIS users who have high injury rates for injuries that occur at a particular site. For example, an IRIS user, when analyzing their two man task collection crews' injury rates appeared to have low injury rates. However, when just their "on collection route" injury rates are singled out, they were actually high because they spent a great deal of time going to and from the disposal site, which was located at the other end of town.

3.3 IMPROVING IRIS DATA AND ANALYSES

Unlike the data analyses discussed in the previous section, there is one area of IRIS data that can be "back tracked" on because it is presently unknown in the IRIS data base, the equipment data. The equipment number was obtained as part of the telephoned injury description.

In addition, the data analyses for specialized computer printouts that require the "master" program would be greatly aided if the program could be altered to be more specialized, and therefore, not require hand computations.

3.3.1 Updating Equipment Data

One major project in updating the "unknowns" in the IRIS data base is to systematically obtain the equipment data. Because of the complexity of the form and the large turnover in equipment, the IRIS users tended to not complete the equipment data. The data was considered to not be vital in performing the routine analyses on their injury data, and the users were not pressed to turn them in. (Otherwise, the reports would even be later in being produced if the equipment data was a condition in their receiving their QSMR, as the injury, time lost and direct cost, and employee data are.) Consequently, nearly half the equipment numbers on the reported injuries do not have their equipment data on file.

The equipment data would most readily be obtainable by telephoning, since this relieves the burden of the non-continuing IRIS users of completing the forms and is quicker because the foremen generally know what kind of make the equipment is by memory. The other data on the form such as "type of use" and "average miles per day" can be applied to a whole block of equipment that are used for the same purpose.

This is not as large a project as it may seem because only the equipment related accidents (e.g., struck against step, fell when getting out of cab, etc.) need to have the data on the equipment involved. Detailed equipment man-hours is impossible to obtain because it requires the almost daily keeping track of the equipment in use, and with the average solid waste organization this is difficult because of equipment failure or "down time" that would greatly affect the equipment in use at any one time.

Data analyses that can be performed with the equipment data obtained can include what equipment body makes (e.g., Heil Mark II) have frequent overexertion accidents and objects ejected from the hopper accidents, but injury rates are not obtainable.

3.3.2 Further Developing the "Master" Program

As outlined in Section 2.3.3, the "master" program has certain limitations that necessitates hand calculations as well as developing tables rather than being able to use the printout "as is":

- It does not order the categories from the highest to the lowest number of injuries, days lost or direct costs.
- It does not compute percentages of the total.
- It does not compute injury rates.

The modifications of the program to include more functions would greatly reduce the analysis time required and increase the range of possible analyses.

3.4 OBTAINING ADDITIONAL DATA ON THE SOLID WASTE INDUSTRY INDEPENDENT OF IRIS DATA

Certain safety information do not require consistent and detailed reporting and can therefore be gathered from non-users. The advantage to gathering data from a larger number of solid waste organizations for such items as successful countermeasures implemented is apparent. In addition, such serious injuries as fatalities and permanent disabilities are of particular interest, but the IRIS data yields only a small amount of these because of their rarity.

3.4.1 Performing Study of Solid Waste Fatalities With State Worker's Compensation Data

Fatalities are relatively rare occurrences. Of the 11,000 IRIS injuries, only 3 were fatalities. They are rare, and, therefore, patterns in their accident causations are not apparent with the limited IRIS data. Because of their high cost settlements, not to mention the human anguish incurred, they are of serious concern to the solid waste manager.

The major source of fatality data for the solid waste industry is the State Worker's Compensation First Reports of Injury. Often, reports on fatalities are also accompanied by investigations, which make this group of accidents relatively detailed. The individual injury reports would have to be compiled, copied, and analyzed.

In addition, with the present ten continuing users, the IRIS Newsflash has too small of a data source to be effective in announcing serious accidents and alarming accident trends noted. Therefore, other severe injuries, such as permanent disabilities, can also be obtained at the same time as the fatalities and be used for several issues of the IRIS Newsflash (or a Special Report).

Relatively few states need to be sampled since it is not a study of all solid waste fatalities, and a populous state's data for one year will be more than that of IRIS. The states should be chosen for:

- population
- accessibility of the original injury report (e.g., filed by SIC code or date of injury)
- accessibility of direct costs
- different geographic locations because of varying collection systems

The time period researched should be no sooner than a year and a half ago, to obtain final direct cost settlements on the fatalities, and a minimum of 100 fatalities should be obtained for a reasonable sample size.

3.4.2 Obtaining "Success Stories" from the Solid Waste Industry

Presently, there is no systematic means of cataloguing and relating injury reduction "success stories". The same mailing list developed for mailing the brochure on the IRIS publications to the industry can be used to obtain and inform the solid waste management industry of successful injury reduction measures that organizations have implemented. The injury reduction measures could include:

- Specific equipment modifications (e.g., hopper flaps)
- Unique incentive programs (e.g., sending flowers to the employee's wife when he drives for 10,000 miles without an accident)
- Specific employee training techniques (e.g., obstacle course for drivers)
- Personal protective equipment tried (e.g., a certain type of safety shoe provided better traction on snow)
- Injury reduction successes when new equipment are provided (e.g., installing container lift mechanisms that attach to the hopper sill reduced an organization's overexertions by two-thirds).

These "success stories", although they abound, are rarely written about. The general success stories found in the solid waste magazines emphasize success in terms of productivity and cost savings, instead. Therefore, there is a need to catalog and distribute this vital safety resource for the solid waste industry.

This survey would require developing a detailed questionnaire that would be accompanied by examples of success stories from the IRIS users. The organizations would be asked to give brief descriptions of their injury reduction measures followed with a detailed telephone interview with IRIS personnel to obtain more specifics. Pictures, if helpful, would also be requested.

These "success stories" would best be presented to the industry in monthly newsletter form, perhaps as a part of the IRIS News, rather than in one volume. A gradual release of the stories would encourage more organizations to send in their stories, also. Organizations who contributed "success stories" may also receive the IRIS publications free of charge.

3.5 VISITS TO THE CONTINUING IRIS USERS

Because of reducing the costs of IRIS, actual visits to the users were not part of the procedure. However, IRIS has found that with the users that have been on-line reporting injuries and receiving data analyses for the past two years, visits to the continuing IRIS users become necessary to provide a follow-up to the Quarterly Safety Management Reports. The visits can be used to:

- develop a working knowledge of their individual safety problems that can provide better insight into their injuries

- perform a structured, in-depth interview with the user to ascertain whether they are utilizing the IRIS data, whether they find the data useful, whether they would like to see additional analyses performed, etc.

- aid them in implementing actual countermeasures. For instance, IRIS expertise can be used to aid them in developing a complete injury reporting form, in revising their recordkeeping system, in developing safe work practices, in putting on safety training sessions, etc.

EXHIBITS

USER No._____

EXHIBIT 1

EMPLOYEE INFORMATION FORM

Please Print

1. EMPLOYEE NAME ____________________, ____, ____.
   Last Name 1st. mid. Initials
2. SOCIAL SECURITY NUMBER ____-___-____
3. DATE OF BIRTH _____ _____
   Month Year
4. CURRENT HEIGHT _____ _____
   Feet Inches
5. CURRENT WEIGHT _____
   Pounds
6. LAST YEAR OF SCHOOL COMPLETED _____
   Years
7. DATE HIRED _____ _____ _____
   Month Day Year
8. TYPE OF EMPLOYMENT ____ Permanent ____ Temporary
9. STATUS ____ Full-Time ____ Part-Time
10. DEPT/DIV/SECTION, ETC. IN WHICH THE EMPLOYEE CURRENTLY WORKS (I.E., RESIDENTIAL COLLECTION, COMMERCIAL COLLECTION, LANDFILL, BRUSH COLLECTION, ETC.) ______________________________
    ____
    ____
    ____
11. CURRENT JOB CLASS TITLE (TRUCK DRIVER, COLLECTOR, LEADMAN, ETC.) ______________________________
    ____
12. DISTRICT WHICH THE EMPLOYEE NORMALLY WORKS OUT OF ______________________________
13. IF EQUIPMENT OPERATOR, ENTER TYPES OF EQUIPMENT OPERATED AND ANY OTHER INFORMATION THAT WILL AID IN CLARIFYING THE JOB TITLES ______________________________
    ____
    ____
    ____

EXHIBIT 2

EMPLOYEE INFORMATION

EXPLANATION OF EACH TYPE OF EMPLOYEE DATA REQUIRED

1. Employee Name

The employee's last name should be entered first.

The employee's initials should be entered first initial in the first box and middle initial in the second box provided. The initials should be entered only in the spaces provided for initials and not in the space provided for the last name. If the employee has more than two initials, enter the first two only and omit the others.

The employee's name is used only for updating the employee data update list which is sent to you each month. This provides you a list of all employees included in IRIS. It will also be used to cross out terminated employees and enter job class changes. All names are held in the utmost confidentiality. The employee's name is never listed on any analysis of injuries.

2. Social Security Number

It is absolutely essential that the Social Security Number be entered on each EIF and that it be entered correctly. If the Social Security Number is entered incorrectly, the computer will either be unable to match the injury report data you phone in later to the employee data or it will match it to the wrong employee.

If Social Security Numbers are not available, another employee ID number must be used instead. For example, if your organization uses an identification code for each employee, this number must be used instead. If you do not have either a Social Number or employee ID number for each employee, assign a unique number to each employee. Again, it is essential that this number be entered correctly in order to correctly match employee data with injury data.

3. Date of Birth

Self-explanatory.

4. &
5. Current Height/Weight

Self-explanatory. This information should be obtained through employee questionnaires, if possible, as old records on this information (especially weight) are often outdated.

6. Last Year of School Completed

For college or other education beyond high school, add 12 to the number of years beyond high school. For example, 5 years of college would be entered as 17 (i.e., 12 + 5).

7. Date Hired by Current Employer

This is the date that the employee was most recently hired by your organization, if he has been hired several times.

8. Type of Employment

Indicate whether the employee is permanent or temporary. Enter all special works (i.e., students, welfare employees, OEO employees, etc.) as temporary.

9. Status

Indicate whether the employee works full-time or part-time according to your organization's definitions. Full-time may not necessarily mean 40 hours a week, in your organization; for example, employees who work on a task system would probably be considered full-time by most employees even though they work a 3-hhour week, perhaps.

10. Department/Division/Section

Enter the department/division/section that the employee is permanently assigned to in terms of your organizational structure. Be complete; include all information on the organizational unit which the employee works out of. Include the type of unit (i.e., whether it is a bureau, division, department, branch, unit, etc.) as well as the exact name(s) of the division.

11. Current Job Title

The current job title should be the official job title. For example, "Sanitation Crewman" may be the official title for "Garbageman." Be complete and exact.

12. District

Name of the District that the employee normally works out of.

13. Crew Type

If the employee works on a crew, indicate the name of type of crew he normally works on, e.g., brush crew, bulky waste crew, paper crew, etc.

IF YOU REQUIRE FURTHER EXPLANATION CONCERNING EMPLOYEE DATA, CONSULT THE IRIS CENTRAL OFFICE.

TO PROVIDE EMPLOYEE DATA TO IRIS

BY HAVING YOUR EMPLOYEES COMPLETE A QUESTIONNAIRE,

FOLLOW THIS PROCEDURE:

1. Enclosed in this package is a set of blank employee information forms (EIFs) which have been developed by IRIS for your organization to use as questionnaires and have places to enter each of the types of information listed above. There should be one copy of the form for each of the employees who are going to complete a questionnaire.

2. Also enclosed is an explanation of each of the types of employee data required by IRIS. If you have any doubts about the meaning of any of the information shown on the EIF please consult this explanation or contact the IRIS Central Office.

3. Prepare or obtain a list of the names of all current current employees who are to be included in IRIS.

4. At a meeting of your foremen, explain the purpose of the EIFs and how they are to be completed. It is usually a good idea to have the foremen complete their own EIF at this meeting as this gets them familiar with the form.

5. Have each foreman distribute an EIF to the employees working under them, and HAVE THE EMPLOYEES COMPLETE AND RETURN THE EIFs WHILE THEY ARE STANDING IN FRONT OF THE FOREMAN. This might be done at a tailgate meeting when the employees pick up their checks, or route slips, etc. IT IS USUALLY A MISTAKE TO GIVE THE EMPLOYEE THE EIF AND LET HIM RETURN IT AT HIS OWN TIME. This is because it is very difficult to track down each employee who hasn't returned his EIF, and it can take weeks to get them all in. If you have the employees complete them "while you wait," the operation is over in about 15 minutes. Moreover, you can help employees who are having difficulty in completing the EIF.

6. Obtain all the completed EIFs. Using the list you prepared in Step 3, check off the name of each employee who returned an EIF.

7. Identify the employees who have not completed at EIF (e.g., those who were absent on the day they were distributed.

8. Contact these employees and get them to complete an EIF.

9. Review all completed EIFs and make sure that all are legible and complete. Contact the employee in cases of doubt.

10. Send the EIFs and the list you prepared in Step 3 to the IRIS Central Office.

EXAMPLE

EMPLOYEE INFORMATION FORM

Please Print

1. EMPLOYEE NAME — Doe (Last Name), J. E. (1st. mid. Initials)

2. SOCIAL SECURITY NUMBER — 559-66-5401

3. DATE OF BIRTH — 2 (Month) 47 (Year)

4. CURRENT HEIGHT — 6 (Feet) 4 (Inches)

5. CURRENT WEIGHT — 190 (Pounds)

6. LAST YEAR OF SCHOOL COMPLETED — 12 (Years)

7. DATE HIRED — 10 (Month) 17 (Day) 73 (Year)

8. TYPE OF EMPLOYMENT — [✓ Permanent] ___ Temporary

9. STATUS — [✓ Full-Time] ___ Part-Time

10. DEPT/DIV/SECTION, ETC. IN WHICH THE EMPLOYEE CURRENTLY WORKS (BE COMPLETE). — Bureau of Sanitation; Residential Collection Unit

11. CURRENT JOB CLASS TITLE (ENTER THE COMPLETE AND EXACT FORMAL TITLE). — Sanitation Crewman I

12. DISTRICT WHICH THE EMPLOYEE NORMALLY WORKS OUT OF — Southside

13. TYPE OF CREW WHICH THE EMPLOYEE NORMALLY WORKS ON (IF WORKING IN CREW) — Bulky Waste Crew

SS-IRIS(EM)-Rev. 3-9/75

EXHIBIT 3

TYPES OF USE CODES

11 Residential Collection
12 Commercial Collection
31 Street Cleaning
21 Landfill Operations
22 Incinerator Operators
23 Transfer Station Operations
24 Recycling Operations
41 Office & Yard Use
51 Garage Use

EQUIPMENT/VEHICLE INFORMATION FORM

User No. ______ User Name ________________________________ PG. ____ of ____

EQUIPMENT NO. (use your numbers)	EQUIPMENT OR VEHICLE TYPE (e.g., rear-end loader)	CHASSIS DESCRIPTION			PACKER DESCRIPTION					DATE OF PURCHASE (mo/yr)	TYPE OF USE (see codes)	HOW OFTEN IS THE EQUIPMENT MAINTAINED? (e.g., weekly)	AVERAGE USAGE				
		MAKE	MODEL (for equip.only, not veh.)	YEAR	MAKE	MODEL	YEAR	CAPA-CITY (cb.yds.)	SILL HGT. (inches)				HRS. per DAY	DAYS per WEEK	WEEKS per YEAR	TONS per DAY	MILES per DAY

EXHIBIT 4

EQUIPMENT INFORMATION

TO PROVIDE EQUIPMENT DATA TO IRIS BY COMPLETING AN IRIS EQUIPMENT/VEHICLE INFORMATION FORM FOLLOW THIS PROCEDURE:

1. Enclosed in this package is a set of blank Equipment/Vehicle Information Forms (EVIFs) which have been developed by IRIS for your organization and which provide places to enter each of the types of required information.

2. Also enclosed is an explanation of each of the types of equipment data required by IRIS on the EVIF. If you have any doubts about the meaning of any of the information shown on the EVIF please consult this explanation or contact the IRIS Central Office.

3. Complete the EVIF by listing the equipment or vehicle number of ALL pieces of equipment included in IRIS in the left hand column (i.e., column headed Equipment No.) and filling in the correct information corresponding to each piece of equipment in the columns to the right of the equipment no. Use the explanation sheet if you have any questions. You may need to make an estimate for certain types of equipment information, e.g., sill height, average usage. For sill height you might wish to measure several packers and use the average as an estimate. In amking your estimate, be certain to consider the effect of different tire sizes on sill height.

4. The EVIF is designed so that you can list the pieces of equipment having the same characteristic more easily. This is done by entering each of the equipment numbers of all pieces of equipment that are the same in rows right under each other, completing the columns for one equipment number, and showing "dittos" for the other pieces of equipment which are exactly the same. The attached completed EVIF gives an example of how to do this. If you use ditto's, be certain that all the pieces of equipment are exactly the same. Notice that the example has dittos except for a piece of equipment that has a different characteristic.

5. Return the completed EVIFs to the IRIS Central Office.

EXPLANATION OF TYPES OF
EQUIPMENT DATA COVERED BY IRIS

The following is a brief explanation of each of the columns on the IRIS Equipment/Vehicle Information Form. You are to supply this information on each piece of equipment or vehicle included in IRIS, e.g., packers, automobiles, bulldozers, etc. Please contact the IRIS Central Office if you need any further explanation on equipment information.

EQUIPMENT NO.

Use your organization's equipment or vehicle number. If you do not have equipment numbers, designate a different number to each piece of equipment or vehicle.

EQUIPMENT OR VEHICLE TYPE

This is a description of the type of equipment which is associated with the vehicle. The following is a list of possible equipment types: (this list is given to help make it clear what is meant by equipment type; your organization may have types of equipment which are not on this list, in which case you should enter the other type(s) your organization has):

Rear-end loader
Front-end loader
Side loader
Load lugger
Roll-off
Container Delivery Truck
Trailer (transfer truck)
Cushman scooter
Overhead crane (incinerator)
Equipment service truck
Street sweeper
Tow truck
Snow plow
Crew truck
Open body dump truck
Open bed truck
Pickup truck

Automobile
Tractor
Bulldozer
Earthmover
Scraper/grader
Forklift
Dragline
Disker
Tilt frame
Highlift
Crane
Compactor
Landfill spray truck
Water pump truck
Bobcat

CHASSIS DESCRIPTION

The description of the equipment is divided into "chassis description" and "packer description". For packers fill in both descriptions; for other types of equipment fill in only the chassis description.

Make

Self-explanatory

Model

Complete this for equipment only. (It is not necessary to show the model for automobiles.)

Year

Self-explanatory

PACKER DESCRIPTION

Make

Example: Heil, Leach, Garwood, etc.

Model

Example: 2R (for Leach 2R)

Year

Self-explanatory

Capacity

Indicate the capacity of the packer in cubic yards (e.g., 25 yd.).

Sill Height

This is an important piece of information as the height of the sill may be related to back injuries occurring while dumping. It is recognized that you may not know the sill height of each packer and that it may vary from packer to packer depending on tire size. However, because of the importance of this information, IRIS encourages you to make an estimate. It may be advisable to make some measurements on a few packers. For consistency, in all cases measure from the ground to the "lip" of the sill, even for side loaders.

DATE OF PURCHASE

This data is used to indicate how long the equipment or vehicle has been used by your organization, recognizing that for many packers the year in which they were made is not an indication of this. Indicate month and year.

TYPE OF USE

Use the codes shown at the top of the form.

MAINTENANCE SCHEDULE

Indicate how often the piece of equipment is regularly maintained, e.g., daily, weekly, etc. Enter "as needed" if there is no regular maintenance.

AVERAGE USAGE

This information is collected in order to measure the hours of exposure for each piece of equipment. These hours are added to obtain the total hours of use (exposure) for each equipment characteristic (e.g., total hours of exposure for rear-end loaders) which is used in computing the injury rates by equipment characteristic.

In most cases you will need to use averages and to make estimates. If a piece of equipment is usually used as a "space", indicate this by showing reduced days per week of usage (you may use fractions).

TYPES OF USE CODES

11 Residential Collection
12 Commercial Collection
31 Street Cleaning
21 Landfill Operations
22 Incinerator Operators
23 Transfer Station Operations
24 Recycling Operations
41 Office & Yard Use
51 Garage Use

EQUIPMENT/VEHICLE INFORMATION FORM

User No. 026 User Name Your City U.S.A. pg. 1 of 2

EQUIPMENT NO. (use your numbers)	EQUIPMENT OR VEHICLE TYPE (e.g., rear-end loader)	CHASSIS DESCRIPTION			PACKER DESCRIPTION					DATE OF PURCHASE (mo/yr)	TYPE OF USE (see codes)	HOW OFTEN IS THE EQUIPMENT MAINTAINED? (e.g., weekly)	AVERAGE USAGE				
		MAKE	MODEL (for equip. only, not veh.)	YEAR	MAKE	MODEL	YEAR	CAPACITY (cb.yds.)	SILL HGT. (inches)				HRS. per DAY	DAYS per WEEK	WEEKS per YEAR	TONS per DAY	MILES per DAY
101	Side-loader	MACK	100	73	Shupak	700	71	20 yd	42"	73	12	As needed	6	4	50	9.5	15
102	↓	↓	↓	↓		↓	'71	↓	↓	↓	↓	↓	"	'	"	9.5	"
103	↓	↓	↓	'↓		↓	70	↓	↓	↓	↓	↓	6	4	2	9	"
B111	Bulldozer	Harvester	107	73						'72	21	↓	↓				
B112	↓	↓								↓	↓	↓	↓				
B113	↓	↓								↓	↓	↓	↓				
9001	Automobile	Ford		67						70	41	↓	↓				
9002	"	"		74						74	41	↓	↓				
9003	Rear End loader	International	797	73	Leach	2R	73	25 yd	21"		11	Weekly	7	5	50	6	21
9004	↓	↓	↓		↓	↓		↓	↓			↓	↓	↓	↓	↓	↓
9005	↓	↓	↓		↓	↓		↓	↓			↓	↓	↓	↓	↓	↓
9006	↓	↓	↓		↓	↓		↓	↓			↓	↓	↓	↓	↓	↓
9007	↓	↓	↓		↓	↓		↓	↓			↓	↓	↓	2	↓	↓
9008	↓	↓	↓		↓	↓		↓	↓			↓	↓	↓	2	↓	↓

EXHIBIT 5

BACKGROUND INFORMATION

(Please Print)

IDENTIFICATION

1. Name of organization or department ____________________

Director (name & title) ____________________

Address: Room No. ____________________

Street ____________________

City, State, ZIP ____________________

Phone Number (include Area Code & Ext.) ____________________

2. PERSONS FOR CONTACT:

IRIS Coordinator

Name ____________________

Title ____________________

Department ____________________

Address: Room No. ____________________

Street ____________________

City, State, ZIP ____________________

Phone Number ____________________

Person to contact for Time Lost & Cost Data on injuries (e.g., Workmen's Compensation insurance officer)

Name ____________________

Title ____________________

Department ____________________

Address: Room No. ____________________

Street ____________________

City, State, ZIP ____________________

Phone Number ____________________

Person(s) to contact for Employee Information (e.g., payroll clerk for the sanitation department). If there is more than one person handling personnel for sanitation employees, list each person and the division or section they handle.

Name ______________________
Title ______________________
Division or Section ______________________
Address: Room No. ______________________
Street ______________________
City, State, ZIP ______________________
Phone Number ______________________

Name ______________________
Title ______________________
Division or Section ______________________
Address: Room No. ______________________
Street ______________________
City, State, ZIP ______________________
Phone Number ______________________

Person to contact about Equipment Information

Name ______________________
Title ______________________
Department ______________________
Address: Room No. ______________________
Street ______________________
City, State, ZIP ______________________
Phone Number ______________________

Company or City-Wide Safety Officer (or person responsible for Safety)

Name ______________________
Title ______________________
Department ______________________
Address: Room No. ______________________
Street ______________________
City, State, ZIP ______________________
Phone Number ______________________

3. PERSON(S) TO BE SENT QUARTERLY SAFETY MANAGEMENT REPORTS (QSMRs):

Name ______________________________
Title ______________________________
Department ______________________________
Address: Room No. ______________________________
Street ______________________________
City, State, ZIP ______________________________
Phone Number ______________________________

Name ______________________________
Title ______________________________
Department ______________________________
Address: Room No. ______________________________
Street ______________________________
City, State, ZIP ______________________________
Phone Number ______________________________

Name ______________________________
Title ______________________________
Department ______________________________
Address. Room No. ______________________________
Street ______________________________
City, State, ZIP ______________________________
Phone Number ______________________________

OPERATIONS INFORMATION		(Check one)
1.	Is your organization a	____ private solid waste company ____ municipal solid waste agency ____ other. Please describe ________________________
2.	Do you perform	____ residential collection only ____ commercial collection only ____ or some of each
	For residential collection, please check all of the following that apply	____ curbside collection ____ backyard collection ____ alley collection ____ mechanical collection (e.g., "Godzilla;" not bulk container collection)
3.	Does your organization use intermediate containers (i.e., "tubs," "carts," or other type of container into which refuse is dumped from residential containers and carried to the packer). If so, please describe it: ________________________	____ no ____ yes, on all routes ____ yes, on some routes
	If so, does the intermediate container have wheels?	____ no ____ Yes, on all inter. containers ____ yes, on some inter. container
4.	Do your organization's collection crews work on a	____ task system basis only ____ fixed-hour (e.g., 8-hour day) basis only ____ some task and some fixed-hour

(Check one)

5. Indicate frequency of residential collection:

___ once-a-week
___ twice-a-week
___ other. Please describe
____

6. Do you use

___ bulk containers only
___ manual container collection only
___ both bulk and manual

7. Does your organization use scooters (e.g., 3-wheel Cushmans) in its collection service

___ no
___ some routes
___ all routes

8. Check all collection crew size(s) at your organization. Include the driver.

(Check all those that apply)

___ 1-man crew
___ 2-man crew
___ 3-man crew
___ 4-man crew
___ 5-man crew

9. Check which types of collection equipment are used at your organization:

___ Front-end Loader
___ Rear-end Loader
___ Side Loader
___ Roll-Off
___ Load Lugger
___ Container Delivery Truck
___ Trailer

List other types of collection equipment used at your organization.

____
____
____
____

ORGANIZATION "CHART"

Please list (draw) or attach a list (drawing) of all the sections of your organization. If your organization is a private solid waste company, this would be the organization chart for the whole company. In a municipality, this would be an organization chart for the sanitation department. Give the exact name of each section and indicate whether it is a section, unit, division, bureau, etc.

SECTIONS YOU WANT INCLUDED IN IRIS

(See Section 1.3.2 of the Background Information instructional manual)

The following are basic "sections" of a solid waste firm or sanitation department. Indicate which sections of your organization you plan to include in IRIS, the name your organization gives to these sections and the number of employees in these sections. If you do not have a section at your organization, or do not wish to include it in IRIS, circle "Not Included."

	(Circle one)	Approximate No. of Employees
Are ALL employees of your organization or sanitation department going to be included in IRIS?	Yes No	
Residential Collection		
Your organization's NAME FOR THIS SECTION. (Indicate whether it is a department, division, section, unit, bureau, etc., e.g., Residential Services Division.)	Included Not Included	________
Name ________________________________		
Commercial Collection	Included	________
Name ________________________________	Not Included	
Disposal		
Name ________________________________	Included	
Indicate the number of disposal facilities your organization is including in IRIS.	Not Included	
No. of:		
____ Landfill(s)		______
____ Incinerator(s)		______
____ Transfer Station(s)		______
____ Recycling Facility(s)		______
____ Other. Please describe ________________		______
Dead Animal Collection	Included	______
Name ________________________________	Not Included	
Street Cleaning	Included	______
Name ________________________________	Not Included	

	(Circle one)	Approximate No. of Employees
Weed & Litter Control	Included	________
Name________________________________	Not Included	
Equipment Maintenance	Included	________
Name________________________________	Not Included	
Administration (including clerical personnel)	Included	________
Name________________________________	Not Included	
Other Section(s) Included		
Name(s)______________________________		________
________________________________		________
________________________________		________

TOTAL NUMBER OF EMPLOYEES INCLUDED IN IRIS ________TOT

CURRENT INJURY REPORTING SYSTEM (IF MUNICIPAL ORGANIZATION, REFER ONLY TO THE SANITATION DEPARTMENT)

Describe briefly what happens when an injury occurs:

1. How does an injured employee on a route notify the office of the accident?

2. Are all injured employees required to visit a doctor or medical facility?
____Yes
____No

3. Does your organization have a set of doctors that the injured employee must use?
____Yes
____No

4. Do you have a first aid station?
____Yes
____No

5. Who now completes the injury reports at your organization? Give name(s) and title(s).
____
____

6. How strong is the effort to have all injuries reported?

   Are injury reports normally completed on "first-aid" injuries
   ____Yes
   ____No

7. What investigations are made of injuries? By whom? For what types of injuries?

8. Who REGULARLY reviews completed injury reports? Give name(s) and title(s).
____
____
____

9. What types of injury statistics are currently being compiled by your organization? By whom? Who reviews them? (Include statistics compiled by the city-wide safety office, if your organization is a municipality or by the head office if a private company.)

SAFETY PROGRAM (FOR SANITATION DEPARTMENT ONLY)

1. How many personnel does your organization have assigned to solid waste safety?

_____ full-time   _____ as a part of their job
no.   no.

2. a. Who is in charge of your safety program? (Give name & title)

b. What does it include?

c. Does your safety program include

_____ movies
_____ pamphlets
_____ posters
_____ demonstratio
_____ tail gate meetings

3. a. Do you have a safety committee?

_____ Yes
_____ No

b. At what level is it organized? (e.g., departmental, by district, etc.)

c. Who are its members? How are they chosen?

d. Is it mandatory to attend?

____Yes

____No

e. How often does the committee meet?

f. What is the committee's purpose and activities?

g. Does the committee have punitive power (e.g., can it recommend suspension of employees)? Please describe.

____Yes

____No

4. Estimate how much money per year your organization spends on safety. (NOT including the cost of injuries.) Include the salaries of safety personnel and the salaries for the time that regular employees and foremen spend on safety.

$____________

5. a. Do you have any complaints about your collection equipment from the standpoint of safety? What are they?

____Yes

____No

b. Do you have difficulties getting the safety specifications you want included in your equipment bids?

____Yes

____No

What procedure would you follow to get a safety specification added?

c. What kinds of safety devices do you currently have on your packer trucks? Have you made any special adaptations for the sake of safety? Please describe in detail.

d. Have you made any adaptations to other equipment (e.g., intermediate container)? Please describe.

____Yes

____No

6. What special changes, other than equipment, have you made to combat injury problems?

7. Do your employees belong to a union? What role does the union play in safety?

____Yes

____No

8. a. What types of container rules does your organization come under?

For Container type? (e.g., no oil drums)

For Container size?

For Container weight?

For Container condition?

For Container location?

b. If you are a private firm, are these municipal regulations or simply rules which your organization uses?

____municipal regulations

____organization rules

c. How well are these rules enforced?

9. What are the injury rates at your organization? (if you know them)

OSHA Incidence Rate ____________

or ANSI Frequency Rate ____________

ANSI Severity Rate ____________

If you do not know the rates, estimate the number of injuries your organization had last year.

____injuries

Are these lost time cases only?

____Yes

____No

10. Do you think the number of injuries at your organization is greater than or less than the number of injuries at other organizations in the solid waste management industry?

____ greater

____ less

On what do you base this decision?

11. What do you think might be the special causes of injuries at your organization? List any special features about your region, your employees, your operational methods, etc.

12. Do you think that with sufficient time and money, anything could be done to reduce accidents at your organization?

____ Yes

____ No

What could be done?

13. Do you have any plans for improving safety at your organization in the near future? Please describe.

____ Yes

____ No

HIRING & TRAINING

1. a. Do you have any hiring qualifications that are related to safety?

____Yes

____No

What are these?

b. Do you hire only experienced personnel?

____Yes

____No

____Try to

c. Do you give pre-employment physicals before hiring?

____Yes

____No

What do they include?

2. a. What type of training do you provide a new hire? Does it include more than teaching him the routes?

____Yes

____No

b. What aspects of safety are included in the training?

c. Are there any instructions on how to lift?

____Yes

____No

How is this instruction given?

d. How much time is spent on training a new employee?

e. Is there any follow-up training for employees who have been at your organization for a period of time?

____Yes

____No

What type of training? How much time is spent?

3. Estimate how many dollars per year your organization spends on training. (Include the salaries for the new employees and the trainers while in training.) $____________

YOUR ORGANIZATION'S IDENTIFICATION SYSTEM

1. Does your organization have an identification number for each major piece of equipment?
____ Yes
____ No

2. Do you have a list of equipment (computerized or otherwise). If so, please attach and send with this package.
____ Yes
____ No

3. Do all of your employees have some number that could be used as an identifying number? (e.g., Social Security number, work I.D. number, etc.)
____ Yes
____ No

4. For those employees that you want included in IRIS, do you have a list (computerized or otherwise) giving names, and identification numbers? If so, please attach and sent with this package.
____ Yes
____ No

5. Are your organization's operations divided into more than one district?
____ Yes
____ No

Does each district have a number?
____ Yes
____ No

6. Do you have more than one office?
____ Yes
____ No

Is there an office in each district?
____ Yes
____ No

7. Do you have more than one sanitation garage?
____ Yes
____ No

Does each garage have a number?
____ Yes
____ No

MATERIALS TO ATTACH

1. A JOB CLASS LIST (WITH ACCOMPANYING JOB DESCRIPTIONS IF YOU HAVE THEM), SHOWING JOB CLASSES TO BE INCLUDED IN IRIS. (VERY IMPORTANT - IRIS MUST HAVE THIS INFORMATION.)
2. A copy of the injury report form which your organization currently uses.
3. A copy of any recent injury statistics you have compiled.
4. Any materials on your safety or training programs.
5. Any written work rules which you give to your new employees.
6. City container regulations.
7. Any pictures or diagrams you have showing adaptations made to your equipment, intermediate containers, etc.

PLEASE REMEMBER TO ATTACH

- YOUR ORGANIZATION "CHART," IF YOU DIDN'T SHOW IT IN THIS FORM,
- YOUR LIST OF EQUIPMENT (IF AVAILABLE),
- YOUR LIST OF EMPLOYEES TO BE INCLUDED IN IRIS (IF AVAILABLE).

O.M.B. No. 158R 0111

EXHIBIT 6

WORKMEN'S COMPENSATION AND LEAVE POLICY

(Please Print)

INSURANCE TYPE AND PREMIUM

1. Is your organization insured by an insurance company or self-insured for Workmen's Compensation?	____Insurance Co. ____Self-Insured

2. If your organization is insured by an insurance company:

a. What is its:

Name ____

Address ____

____

Phone(include Area Code)____________________

Agent's Name (if known)____________________

Agent's Title______________________________

b. What is the Workmen's Compensation Insurance Premium rate at your organization (rate per $100 wages to nearest cent)?	$__ __ . __ __
c. If your organization is a municipality, is the premium rate separately figured for refuse collection and disposal employees, or is it part of the rate for all municipal employees?	____Sanitation separate ____One Rate for all city employees
d. Is your organization's premium rate "experience-rated"?	____Yes ____No
3. Are all your employees covered by Workmen's Compensation?	____Yes ____No

SS-IRIS(WC)-Rev. 4 (8/75)

AVAILABILITY OF TIME LOST & COST DATA

GO TO QUESTION 3 IF YOUR ORGANIZATION IS SELF-INSURED.

1. How often does your insurance company normally send you the current cost figures (i.e., medical expenses and Workmen's Compensation benefits) on each injury?

____monthly
____quarterly
____semi-annually
____yearly
____as requested
____other. Please describe
____

If you gave any answer other than "monthly" or "quarterly":

2. Can you arrange to obtain from your insurance company the current cost data on each injury on a monthly basis?

____Yes
____No

On a quarterly basis?

____Yes
____No

3. Do you feel that your organization will have difficulty for any reason in providing IRIS with prompt (i.e., preferably monthly but at least quarterly) time lost or cost data on each injury? Please describe the difficulties that might arise.

____Yes
____No

NOTE: If your organization will be unable to provide time lost and cost data on each injury on at least a quarterly basis, a special arrangement will need to be made with your organization to obtain this data. You will be contacted about the arrangements if they appear necessary from the answers you have given above.

WORKMEN'S COMPENSATION TEMPORARY DISABILITY

1. How is the Workmen's Compensation Temporary Disability rate figured according to the state rules under which your organization falls? Include the maximum and minimum weekly rates and time and amount limits (e.g., 80% of wages up to a maximum of $85/week; minimum of $20/week). Include any special requirements (e.g., about dependents).

____% of wages

$____max/week

$____min/week

____max. time limit

$________total amount limit

2. What is the Workmen's Compensation Temporary Disability "waiting period"? (i.e., how many days after the injury can Workmen's Compensation Temporary Disability payments begin?)

____days

3. What is the retroactive period? (e.g., in some states the Temporary Disability normally begins after a 3 day "waiting period" but, if the employee eventually loses 7 weeks or more, he is paid for the first 3 days. The 7 weeks is called a retroactive period.)

____

SICK LEAVE (USE FOR ON-THE-JOB INJURIES)

1. How many days of Sick Leave per year is an employee allowed? Describe how Sick Leave days are accrued (e.g., 1 day a month). ____ Days

2. Are employees allowed to use Sick Leave for on-the-job injuries? ____ Yes ____ No

IF SO, ANSWER THE FOLLOWING:

3. Are there any special eligibility requirements for obtaining Sick Leave pay for an on-the-job injury? Please describe or attach a Policy Statement if one is available. ____ Yes ____ No

4. Can accrued Sick Leave be carried over from year to year, or does it start over at certain points (e.g., the end of the year). If the accrued Sick Leave cannot be carried over, describe the "start-over" period. ____ Yes ____ No

5. When an employee leaves your employment is he paid for the Sick Leave he has accrued? If so, describe payment system: ____ Yes ____ No

6. If an employee is using Sick Leave for an on-the-job injury:

   a. Does he get only his accrued Sick Leave days for the injury? ____ Yes ____ No

   b. If not, how many Sick Leave days is he allowed per injury? ____ Days

   c. What percentage of his wages is covered by Sick Leave for an injury (e.g., 80% of his regular daily pay)? ____% wages

INJURY LEAVE

1. Does your organization allow Injury Leave? (Injury Leave is a type of payment, OTHER THAN Workmen's Compensation or Sick Leave, which is only provided for on-the-job injuries. It normally provides for all or part of an employee's wages lost due to an on-the-job injury.)

____ Yes

____ No

IF SO, ANSWER THE FOLLOWING QUESTIONS:

2. What is your organization's Injury Leave called?

____

3. What is the maximum amount of time allowed for Injury Leave per injury? ________

4. How is the amount of the Injury Leave figured? (e.g., 80% of wages.) Please describe and include any changes in pay over time, e.g., "100% of wages for first 6 months, 50% next six months." (Attach a Policy Statement if you wish.)

5. What are the eligibility requirements for Injury Leave? (Attach a Policy Statement if you wish.)

OTHER "TEMPORARY" LEAVES THAN CAN BE USED FOR ON-THE-JOB INJURIES

1. Can your employees use vacation pay for lost time due to an on-the-job injury?

   ____Yes

   ____No

   If so,

   a. How much vacation time is allowed per year for your average collection employees?

      ____

      Describe how it is accrued (e.g., employees have to work six months before eligible for 1/2 year's vacation).

   b. Can accrued vacation time be carried over from year to year, or does it start over at certain points (e.g., the end of the year)? If not, describe the cut-off period.

      ____Yes

      ____No

   c. When an employee leaves your employment is he paid for the Vacation Leave he has accrued? If so, describe the payment system.

      ____Yes

      ____No

2. Are there any other types of leave allowed by your organization which an employee could use as payment for lost time due to an on-the-job injury?

   ____Yes

   ____No

   If so, please describe. Include the amount of leave allowed per year.

3. Is the amount of Workmen's Compensation Temporary Disability payment taken out of the amount paid for Sick Leave or Injury Leave (or other types of leave) so that the total of the benefits does not exceed the employee's wages? Or, is it added "on top of" these leaves?

   ____Taken out

   ____"On top of"

PERMANENT DISABILITY BENEFITS

1. How are Workmen's Compensation Permanent Disability payments figured according to the State rules under which your organization is covered? (give maximum and minimum payments, periods, etc.) Attach policy if you have one.

Permanent Total

____% of wages

$____max/week

$____min/week

____max. time limit

$______total amount limit

Permanent Partial

Death (Widow and Dependent Benefits)

Widow	Widow with Children
____%	____%
$____max/wk	$____
$____min/wk	
____max. period	
$______max. amount	$______

2. Does your organization provide any other type of permanent disability benefits besides Workmen's Compensation? Give name and describe or attach Policy Statement.

____Yes

____No

SALARIES (OPTIONAL)

List or attach the average salary (or salary range) of each of your job classifications included in IRIS. Indicate whether the rates are per hour, per day, per week, etc.

MATERIALS TO ATTACH

If you have any of the following materials readily available to attach to this form, it would greatly improve IRIS' understanding of your organization's insurance system.

1. A copy of the form(s) on which you keep track of the time lost and costs for injuries.

2. A copy of a recent list sent to you from your insurance company showing the time lost and costs of your injuries.

3. A copy of any recent report analyzing injuries provided to you by your insurance company.

4. A copy of your organization's policy on Sick Leave, Injury Leave, Workmen's Compensation and other benefits available for injured employees.

JOB TITLE BY ORGANIZATIONAL UNIT MATRIX

User No. ______ Name ______________________________ pg. ___ of ___

	Job Titles Name																											
	Code																											
Organ. Unit Name	Code																											

SS-IRIS(JOM)-Rev. 1-9/75

EXHIBIT 8

USER CODE & STANDARD JOB CLASS CODE MATCH LIST

User No. ______ Name ________________________________ pg. ___ of ___

USER ORGAN. UNIT & JOB CLASS				STANDARD JOB CLASS		
NAME		CODE		CODE	NAME	
Organiz. Unit	Class	Org.	Class		Division	Class

SS-IR S(JCM)-Rev. 1-9/75

EXHIBIT 9

LIST OF STANDARD JOB CLASSIFICATION CODES

1	SUPERINTENDENT
2	ASST.SUPERINTENDENT
3	DISTRICT MANAGER
4	FOREMAN
5	COLLECTOR (NON-DRIVER)
6	PACKER TR.DRIVER (NON-COLL)
7	COLLECTOR/DRIVER
8	LOAD-LUGGER DRIVER
9	ROLL-OFF DRIVER
10	CONTAINER DELIVERY TRUCK DRIVER
11	MULTIPLE EQUIPMENT DRIVER
12	OPEN BODY TRUCK DRIVER
13	TRAILER DRIVER
14	BULKY ITEM CRANE TR.DRIVER
15	CREW TRUCK DRIVER
16	DEAD ANIMAL COLLECTOR/DRIVER
17	DRIVER/OPERATOR
18	HEAVY EQUIP.OPERATOR
19	MECHANICAL SWEEPER OPERATOR
20	OPERATOR
21	OVERHEAD CRANE OPERATOR
23	MANUAL SWEEPER OPERATOR
24	FEE COLLECTOR/SCALEMAN
25	SPOTTER
26	STOKER
27	MAINTENANCE REPAIRMAN
28	MAINT. MECHANIC
29	MAINT. ELECTRICIAN
30	WELDER
31	LABORER
32	SAN. ENFORCEMENT / CUSTOMER SERVICE OFFICER
33	DISPATCHER
34	SALESMAN
35	WATCHMAN/GUARD
36	CUSTODIAN
37	STORES CLERK
38	SAFETY/TRAINING DIRECTOR
39	ADMINISTRATIVE ASSISTANT
41	CLERICAL PERSONNEL
42	INSPECTOR
43	SURVEYOR
44	SUPERVISOR
45	COMMISSIONER
46	ASST.COMMISSIONER
47	ENGINEER
48	SKILLED LABORER
51	PAINTER
52	DRIVER
53	DEAD ANIMAL COLLECTOR
54	DEAD ANIMAL DRIVER
55	DOG WARDEN
56	EXTERMINATOR
57	BULKY ITEM CRANE TR.LABORER
58	BULKY ITEM COLLECTOR
59	BULKY ITEM CREW FOREMAN
60	CARPENTER
1101	SUPERINTENDENT
1102	ASSISTANT SUPERINTENDENT

1103	DISTRICT MANAGER
1131	LABORER
1132	SAN. ENFORCEMENT / CUSTOMER SERVICE OFFICER
1133	DISPATCHER
1134	SALESMAN
1135	WATCHMAN/GUARD
1136	CUSTODIAN
1137	STORES CLERK
1138	SAFETY/TRAINING DIRECTOR
1139	ADMINISTRATIVE ASSISTANT
1141	CLERICAL PERSONNEL
1142	INSPECTOR
1144	SUPERVISOR
2004	RESID./COMM. COLL. FOREMAN
2005	RESID./COMM. COLL. REFUSE COLLECTOR(NON DRIVER)
2006	RESID/COMM.COLL.PACKER TRUCK DRIVER ONLY(NON-COLL)
2007	RESID/COMM. COLL. COLLECTOR/DRIVER
2009	RESID./COMM. COLL. ROLL-OFF DRIVER
2011	RESID/COMM.COLL MULTIPLE EQUIPMENT DRIVER
2012	RESID/COMM.COLL. OPEN BODY TRUCK DRIVER
2013	RESID/COMM COLL. TRAILER DRIVER
2014	RESID/COMM.COLL.BULKY ITEM CRANE TRUCK DRIVER
2016	RESID./COMM. COLL. DEAD ANIMAL COLLECTOR/DRIVER
2018	RESID/COMM COLL. HEAVY EQUIP. OPERATOR
2042	RESID/COMM. COLL. INSPECTOR
2057	RESIS/COMM COLL. BULKY ITEM CRANE TR LABORER
2058	RESID/COMM BULKY ITEM COLLECTOR
2104	RESIDENTIAL COLLECTION FOREMAN
2105	RESID. COLL. REFUSE COLLECTOR (NON-DRIVER)
2106	RESID. COLL. PACKER TRUCK DRIVER ONLY(NON-COLL)
2107	RESID. COLL. COLLECTOR/DRIVER
2111	RESID. COLL. MULTIPLE EQUIPMENT DRIVER
2112	RESID. COLL. OPEN BODY TRUCK DRIVER
2113	RESIDENTIAL COLLECTION TRAILER DRIVER
2114	RESID.COLL.BULKY ITEM CRANE TRUCK DRIVER
2116	RESID. COLL DEAD ANIMAL COLLECTOR/DRIVER
2153	RESID. COLL. DEAD ANIMAL COLLECTOR
2154	RESID. COLL. DEAD ANIMAL DRIVER
2157	RESID. COLL.BULKY ITEM CRANE TR. LABORER
2158	RESID. COLL. BULKY ITEM COLLECTOR
2161	BULKY ITEM MULTIPLE EQUIPMENT OPERATOR
2204	COMM.COLLECTION FOREMAN
2205	COMM.COLLECTION REFUSE COLLECTOR(NON-DRIVER)
2206	COMM. COLL. PACKER TRUCK DRIVER ONLY (NON-COLL.)
2207	COMM.COLLECTION COLLECTOR/DRIVER
2208	COMM.COLLECTION LOAD-LUGGER DRIVER
2209	COMM.COLLECTION ROLL-OFF DRIVER
2210	COMM.COLL.CONTAINER DELIVERY TRUCK DRIVER
2211	COMM.COLL.MULTIPLE EQUIPMENT DRIVER
2212	COMM. COLL. OPEN BODY TRUCK DRIVER
2257	COMM. COLL. BULKY ITEM CRANE TR. LABORER
2258	COMM. COLL. BULKY ITEM COLLECTOR
3104	LANDFILL FOREMAN
3106	LANDFILL PACKER TRUCK DRIVER (NON-COLL)
3112	LANDFILL OPEN BODY TRUCK DRIVER
3118	LANDFILL HEAVY EQUIPMENT OPERATOR
3121	LANDFILL OVERHEAD CRANE OPERATOR
3124	LANDFILL FEE COLLECTOR/SCALEMAN
3125	LANDFILL SPOTTER
3131	LANDFILL LABORER

3135	LANDFILL WATCHMAN/GUARD
3152	LANDFILL TRUCK DRIVER
3204	INCINERATOR FOREMEN
3218	INCINERATOR HEAVY EQUIPMENT OPERATOR
3220	INCINERATOR OPERATOR
3221	INCINERATOR OVERHEAD CRANE OPERATOR
3224	INCINERATOR FEE COLLECTOR/SCALEMAN
3225	INCINERATOR SPOTTER
3226	INCINERATOR STOKER
3227	INCINERATOR MAINTENANCE REPAIRMAN
3228	INCINERATOR MECHANIC
3229	INCINERATOR ELECTRICIAN
3231	INCINERATOR LABORER
3304	TRANSFER STATION FOREMAN
3313	TRANSFER STATION TRAILER DRIVER
3318	TRANSFER STATION HEAVY EQUIPMENT OPERATOR
3324	TRANSFER STATION SCALEMAN
3325	TRANSFER STATION SPOTTER
3331	TRANSFER STATION LABORER
3404	RECYCLING OPERATIONS FOREMAN
3420	RECYCLING OPERATIONS OPERATOR
3431	RECYCLING OPERATIONS LABORER
4104	STREET CLEANING FOREMAN
4105	STREET CLEANING (NON-DRIVER)
4112	STREET CLEANING OPEN BODY TRUCK DRIVER
4119	MECHANICAL STREET SWEEPER OPERATOR
4123	MANUAL STREET SWEEPER
4131	STREET CLEANING LABORER
5104	WEED AND LITTER CONTROL FOREMAN
5112	WEED AND LITTER CONTROL OPEN BODY TRUCK DRIVER
5115	WEED AND LITTER CONTROL CREW TRUCK DRIVER
5131	WEED AND LITTER CONTROL LABORER
5142	WEED AND LITTER INSPECTOR
6104	EQUIPMENT MAINTENANCE FOREMAN
6128	EQUIPMENT MAINTENANCE MECHANIC
6129	EQUIPMENT MAINTENANCE ELECTRICIAN
6130	EQUIPMENT MAINTENANCE WELDER
6131	EQUIPMENT MAINTENANCE LABORER
6148	EQUIPMENT MAINTENANCE SKILLED LABORER
6151	EQUIPMENT MAINTENANCE PAINTER
6152	EQUIPMENT MAINTENANCE DRIVER
7104	MISCELLANEOUS SERVICES FOREMAN
7105	MISCELLANEOUS SERVICES COLLECTOR (NON-DRIVER)
7107	MISCELLANEOUS SERVICES COLLECTOR/DRIVER
7117	MISCELLANEOUS SERVICES OPERATOR/DRIVER
7131	MISCELLANEOUS SERVICES LABORER
8104	CONTAINER MAINTENANCE FOREMAN
8110	CONTAINER MAINTENANCE CONT. DELIVERY TRUCK DRIVER
8128	CONTAINER MAINTENANCE MECHANIC
8130	CONTAINER MAINTENANCE WELDER
8131	CONTAINER MAINTENANCE LABORER

EXHIBIT 10

```
                              I R I S
                      EMPLOYEE DATA UPDATE LIST
DATE: SEPTEMBER 1, 1977
RETURN ON: SEPTEMBER 30, 1977
IRIS USER: BROOKLINE,MA - 102


     ORGANIZATIONAL          JOB                        PERM/ FULL-TIME/  DATE
     UNIT                    TITLE                      TEMP  PART-TIME   OF CHANGE

BAKER,P.   555-88-9999   DISTRICT 4
     RESIDENTIAL COLL.       LABORER                    PERM  FULL-TIME   ---------
DOE,E.   111-22-4567   DISTRICT 4
     COMMERCIAL COLL.        DRIVER                     PERM  FULL-TIME   ---------
JEFFERSON,H.   222-33-4444   DISTRICT 4
     RESIDENTIAL COLL.       LABORER                    PERM  FULL-TIME   ---------
LOPEZ,J.   777-99-8888   DISTRICT 987
     COMMERCIAL COLL.        DRIVER                     PERM  FULL-TIME   ---------
NELSON,V.   888-44-1234   DISTRICT 4
     RESIDENTIAL COLL.       LABORER                    PERM  FULL-TIME   ---------
SMITH,L.   444-33-2222   DISTRICT 7
     COMMERCIAL COLL.        DRIVER                     PERM  FULL-TIME   ---------
```

EXHIBIT 11

JOB CLASS BASING DATA

USER: NAME ____________________
NUMBER ____________________

JOB CLASS TITLE ____________________
CODE ____________________

TASK SYSTEM? YES ____ NO ____

TIMES AND HOURS WORKED EACH DAY OF WEEK

HRS

SUN ____ : ____ TO ____ : ____ =
MON ____ : ____ TO ____ : ____ =
TUES ____ : ____ TO ____ : ____ =
WED ____ : ____ TO ____ : ____ =
THURS ____ : ____ TO ____ : ____ =
FRI ____ : ____ TO ____ : ____ =
SAT ____ : ____ TO ____ : ____ = ________
SUBTOTAL =

APPROX. OVER TIME HRS./WEEK = ________

TOTAL = ________

HRS/YR NOT COUNTING LEAVE/VACATION ETC.

☐ × 52 = ________ (A)

VACATION: WORKDAYS/YR ________

HOLIDAY/YR NOT MADE UP ________

ESTIMATED OTHER LEAVE (SICK LEAVE, PERSONAL ETC.) ________

TOTAL = ________

HOURS/VACATION OR LEAVE DAY = HRS

TOTAL HOURS LEAVE/VAC = ☐ × ☐ = → ________ (B)

TOTAL HOURS WORKED/YR (A-B) = ________

EXHIBIT 12

TYPES OF EQUIPMENT

CODE	DESCRIPTION
1	REAR-END LOADER
2	FRONT-END LOADER
3	SIDE LOADER
4	LOAD LUGGER
5	ROLL-OFF
6	CONTAINER DELIVERY TRUCK
7	TRAILER(TRANSFER TRUCK)
8	SCOOTER
9	OVERHEAD CRANE(INCINERATOR)
10	EQUIPMENT SERVICE TRUCK
11	STREET SWEEPER
12	TOW TRUCK
13	SNOW PLOW
14	CREW TRUCK
15	OPEN BODY DUMP TRUCK
16	OPEN BED TRUCK
17	PICKUP TRUCK
18	AUTOMOBILE
19	TRACTOR
20	BULLDOZER
21	EARTHMOVER
22	SCRAPER/GRADER
23	FORKLIFT
24	DRAGLINE
25	DISKER
26	TILT FRAME
27	HIGHLIFT
28	CRANE
29	COMPACTOR
30	SPRAY TRUCK
31	WATER PUMP TRUCK
32	BOB CAT
33	RIDING MOWER
34	JEEP
35	FIRE TRUCK
36	COLLECTION TRAILER TRAIN
37	BULKY ITEM CRANE TRUCK
38	TRACTOR & OPEN BED TRAILER
40	OPEN BODY TR W/ HYDR LOADER/CRANE
41	TRACTOR W/ HYDRAULIC LOADER
42	LOWBOY TRUCK
43	LOW BOY TRAILER
44	UTILITY
45	PULL SCRAPPER
46	BACK HOE
47	PANEL TRUCK
48	TRAILER W/CRANE
49	CHIPPER
50	VACUUM COLLECTOR
51	GODZILLA
52	CATERPILLAR
53	TANK TRUCK
54	ROLLER

TYPES OF EQUIPMENT (Continued)

CODE	DESCRIPTION
55	LOADER
56	AIR COMPRESSOR
57	TANDEM DUMP
58	DUMPSTER DUMP
59	DUMP MASTER
60	FLUSHER
61	COMPACTION TRAILER
62	SALT SPREADER
63	CLOSED BODY DUMP TRUCK
64	OPEN BODY TR W/ HYDRAULIC TAILGATE
65	MECH. SIDE LOADER (E.G.RAPID RAIL)
66	CAB
67	MECH FRONT-END LDR (E.G.GODZILLA)
68	MECH. REAR-END LOADER (E.G.COBEY)
99	OTHER

EQUIPMENT MAKES

CODE	DESCRIPTION
1	CHEVROLET
2	FORD
3	DODGE
4	GMC
5	INTERNATIONAL HARVESTER
6	MACK
7	ALLIS-CHALMERS
8	LEACH
9	HEIL
10	EASY PAC
11	CUSHMAN
12	GARWOOD
13	WHITE
14	MASTER
15	WISCONSIN
16	DEITZ
17	MOBIL
18	WAYNE
19	PELICAN
20	ELGIN
21	HYSTER
22	DIAMOND REO
23	HELIX
24	MAXON
25	PAK MOR
26	DEMPSTER
27	MASSEY-FERGUSON
28	STUDEBAKER
29	SEGRAVES
30	FWD
31	JOHN DEERE
32	WILLYS
33	PLYMOUTH
34	AMC
35	DORSEY
36	WHEELHORSE
37	BAKER
38	LAM
39	EVO
40	MAZDA
41	PETERBILT
42	BEMARS
43	CAT
44	AUSTIN WESTERN
45	FRUZHAUF
46	POCLAIN
48	COBEY
49	DEMPSEY
50	HYDE PAK
51	CHIP MOR
52	GIANT VAC
53	WHIRL-WIND
54	TRANSIT

CODE	DESCRIPTION
55	COLBY
56	EZ PACK
57	TRUXMORE
58	LOAD MASTER
59	TRUCK EQUIP
60	LO BOYE
61	HARDEE
62	MILLER TILT
63	RAY GO
64	CRAWLER CRANE
66	BRONCO
67	LODAL
68	SCOUT
69	JEEP
70	KUKA SHARK
71	BALDWIN LIMA
72	RAY-GO-WAGNER
73	TILTSER
74	FASTPAK
75	ARMY SURPLUS
76	GALION
77	AUTOCAR
78	DRESSEL
79	MADSEN
80	ASPLUNDH
81	WESTERN
82	WABCO
83	TYMCO AIR SWEEPER
84	RANGER
85	LOADPACKER
86	CURTIS
87	HOBBS
88	GASKINS
89	PEABODY
90	LE TOURNEAU
91	HOLT
92	HAUL-ALL
93	INGRAHAM
94	KOEHRING
95	SAVAGE
96	INGERSOL
97	PEMCO
98	GALBRAITH
99	OTHER

TYPES OF USE

CODE	DESCRIPTION
10	RESIDENTIAL & COMMERCIAL
11	RESIDENTIAL COLLECTION
12	COMMERCIAL COLLECTION
21	LANDFILL OPERATIONS
22	INCINERATOR OPERATIONS
23	TRANSFER STATION OPERATIONS
24	RECYCLING OPERATIONS
25	RES/COMM.COLL.& TRANS.OPERATIONS
31	STREET CLEANING
32	STREET CLEANING&TRANS.OPERATIONS
41	OFFICE & YARD USE
51	GARAGE USE
61	SNOW REMOVAL
71	WEED & LITTER CONTROL

MAINTENANCE SCHEDULE

CODE	DESCRIPTION
1	ONCE A DAY - TO TWICE/WEEK
2	LESS THAN ONCE/WEEK
3	LESS THAN TWICE/WEEK
4	AS NEEDED--NONE
5	LESS THAN ONCE A MONTH
15	EVERY 1500 MILES
30	EVERY 3000 MILES

EXHIBIT 13

CREW TYPE BASING DATA

USER: NAME ______________________

NUMBER ______________________

CREW TYPE: (check one only under each factor describing crew)

RESID./COMM

____ Residential
____ Commercial
____ Res. & Comm. (on same day)
____ Other ____________ (list)

CONTAINER USED

____ Manual
____ Bulk Container
____ Manual & Bulk
____ Bag
____ Not Applicable (e.g., brush crew)
____ Other ____________ (list)

EQUIPMENT TYPE

____ Rear-end Loader
____ Rear-end Loader & Scooter
____ Front-end Loader
____ Front-end Loader & Scooter
____ Side Loader
____ Train (e.g.,EVO's)
____ Train & Scooter
____ Mechanical Loader (e.g., rapid rail)
____ Open Bed
____ Open Bed & Scooter
____ Open Bed w/Crane
____ Load Lugger
____ Roll-Off
____ Other ______________________ (list)

TYPE

____ Brush
____ Bulky Item
____ Paper
____ Dead Animal
____ Chemical
____ Glass
____ Regular Collection
____ Other ____________ (list)

PT. OF COLLECTION

____ Curbside
____ Alley
____ Curbside & Alley
____ Backyard w/c intermediate can
____ Backyard with tub
____ Backyard with cart
____ Mechanical
____ Not Applicable (e.g., commercial)
____ Other ____________ (list)

____ CREW SIZE (include driver)

For Office Use Only

Std. Crew Type ☐☐☐

Std. Equip. Type ☐☐

AVERAGE NO. OF CREWS OF THIS TYPE AT THIS TIME (A) ☐

Does this no. vary greatly during year? ____ YES

____ NO

TASK SYSTEM? ____ YES ____ NO

SHIFT #

TIMES AND HOURS WORKED EACH DAY OF WEEK

								HRS
SUN	____	:	____	TO	____	:	____	=
MON	____	:	____	TO	____	:	____	=
TUES	____	:	____	TO	____	:	____	=
WED	____	:	____	TO	____	:	____	=
THURS	____	:	____	TO	____	:	____	=
FRI	____	:	____	TO	____	:	____	=
SAT	____	:	____	TO	____	:	____	=

TOTAL (B) ☐

FOR OFFICE USE ONLY

TOTAL CREW HRS PER WEEK (A x B) = (C) ☐

TOTAL MAN-HOURS ON THIS CREW PER WEEK (crew size x C) = (D) ☐

EXHIBIT 14

User No.____

PROTECTIVE CLOTHING BASING DATA

Crew Type Code________

Job Class Titles	Standard Code	Job Class Titles	Standard Code	Job Class Titles	Standard Code
1.________	________	1.________	________	1.________	________
2.________	________	2.________	________	2.________	________
3.________	________	3.________	________	3.________	________
4.________	________	4.________	________	4.________	________

Type	Brand Name	Mandatory Y/N	City Supplies Y/N	Discount %/N	All Job Classes?	Replacement Time	Other

EXHIBIT 15

INSTRUCTIONS FOR PHONING-IN INJURIES TO IRIS

INTRODUCTION

Attached are some copies of a List of Types of Information to Report. This List shows you the types of information that IRIS will require on each injury when you phone-in an injury report. We have found that injury reports that closely follow the list take less time and include all necessary data. Usually the telephone call will take less than three minutes per injury.

SPECIFIC PROCEDURES

1. Make sure you have ready all the types of information shown on the List of Types of Information to Report for the injury you are going to report. You may do this by:
    a) adding the information to your organization's regular injury report form.
    b) making notes on a copy of the List of Types of Information to Report.
2. Dial this number:

(714) 755-0274 or
(714) 755-0275
(San Diego, Calif.)

3. When the IRIS staff member comes on the line:
    a) give your organization's name
    b) give your IRIS User No.

Your IRIS User No. Is

____

4. The IRIS staff member will ask you:
    a) for the identification information regarding the injury (no.'s 1-5 on the List).
    b) to describe the injury in your own words.
    c) any specific questions on types of information on which clarification is needed.

EXHIBIT 16
REVISED

Injury Reporting Phone Numbers

(714) 755-0274
755-0275 OR

LIST OF TYPES OF INFORMATION TO REPORT
(for phoning-in injury reports to IRIS)

1. Your IRIS User No. ______________

2. Injured Employee I.D.:

   a. Name (give spelling) ______________________________.

   b. Social Security # ______________________.

3. Date of accident:

   a. Month ________ day ________ year ________.

   b. Day of week ______________.

   c. Time of day ______________AM / PM

   d. Hours worked prior to injury ______________.

4. District which the employee normally works out of (Must correspond to District List) ______________________.

5. Equipment # ______________________ (all equipment involved).

   a. Was the equipment damaged or malfunctioning before the accident? Yes / No

   b. Which part?______________________

   c. If equipment moving, direction and speed ______________________

6. Describe how the accident happened (in sufficient detail to enable all significant factors to be recorded)______________________________
____
____

7. What was the employee doing (be exact - include description of anything handled or in use by employee) ______________________________
____

8. Part of body injured (e.g., eye) ______________________________

9. Nature of injury (e.g., cut, sprain, bruise) ______________________.

10. General Accident Site (e.g., on collection route, landfill, enroute, transfer station) ______________________________

    Exact site (e.g., at rear of truck, in vehicle cab, on running board, in customer's yard, at dump area) ______________________.

11. Description of container in use - type (e.g., plastic bag) ________________

size (standard = 32 gal.) ____________________, weight ________________

condition (e.g., heavy, sharp edges) ____________________________________

12. Characteristics of waste (e.g., glass, shrubbery, furniture, rocks, paper)

____

13. Protective clothing being worn (e.g., gloves, include all uniform required)

____

14. Crew Type

a. Brush, residential, commercial, street cleaning, (combinations)

____

b. Does crew use bulk container? ________ Is this manual pickup? ________

c. Collection point (e.g., backyard, curbside, alley combinations)________

d. Crew size (include driver) ________________

15. Employee was

a. Working on task system/hourly __________________________?

b. In training/supervising ________________________? Regular job _______?

16. Weather at time of accident (e.g., rain, snow, very hot, very cold)

____

17. Environmental conditions (e.g., excessive noise, glare, exhaust fumes, darkness) ____

18. Surface conditions (e.g., wet, icy, objects on ground, change in level)

____

19. Accident involved:

______ Interaction between employees (e.g., coworker helping employee to lift)

______ Horseplay

______ Hurry, speed, haste

______ Alcohol, drugs

______ Scavenging

______ Attempt to catch or avoid

______ Fatigue

______ Distraction

20. Was the packer operating at the time of accident? Yes / No

Something ejected? Yes / No

21. If other employees injured in this accident, how many? ____________________

22. What do you think was the cause of the accident? _________________________

23. What steps are you taking to prevent this from happening again? ____________

____

EXHIBIT 17

O. M. B. No. 158R 0111
Approval Expires August 1975

Safety Sciences
Division of WSA Inc.
11772 Sorrento Valley Road
San Diego, California
92121
(714) 755-9359

SAMPLE

ELGIN-WAYNE
DISPOSAL COMPANY
INJURY REPORT FORM

FOR THE INJURY REPORTING AND ANALYSIS SYSTEM
OF THE SOLID WASTE MANAGEMENT INDUSTRY

Sponsored Under Contract #68-03-0231
U. S. Environmental Protection Agency
Office of Solid Waste Management Programs

Name of Injured Employee ____________________

Date of Injury ____________________

Injured Employee's Immediate Supervisor ____________________

Injury Number ☐ - 19

Elgin Wayne Disposal No. __________

Name of Person Completing This Form ____________________

Title ____________________

Date ____________________

Names of witnesses to the accident who were not injured:

____

____

____

____

SS-IRAS- Rev. EW2 (7/31/74)

INSTRUCTIONS

1. This Injury Report Form is designed to describe an injury by dividing the description into parts. Each section covers a particular part of the injury. When completing a section, only give information relevant to the part of the injury being covered in that section. There are ten sections to this Injury Report Form.

   - General Information
   - Part of Body Injured
   - Injury Description (e.g., cut, fracture, etc.)
   - Protective Clothing Being Worn
   - Accident Description (e.g., fall, insect bite, etc.)
   - Activity Description (i.e., what the injured employee was doing when he was injured)
   - Traffic Accident Information
   - Outdoor Conditions (at the time of the injury)
   - Characteristics of the Waste (i.e., that's being handled)
   - Written Description

2. Be as specific in your answers as possible.

3. Most questions refer only to the injured employee and only to the time at which he was injured.

4. For all questions
   EITHER: Check the box next to the best provided answer.
   OR: Give the numerical answer requested in the boxes provided.

5. For the questions which ask for numerical answers, complete all boxes. If there are more boxes than required for your answer, place (zero)es in front of your answer. Example: September = 0|9, not 9|☐

6. Disregard the numbers in the top left hand-corner. These numbers are used for processing only.

7. The directions to the individual questions or sections of the Injury Report Form indicate whether one, or more than one, answer is permissible. DO NOT check more than one box unless you are specifically instructed that this is permissible.

8. Please read the directions on each page carefully.

GENERAL INFORMATION

1. Date of Injury ☐☐ ☐☐ ☐☐
mo day yr

2. Injured Employee's Social Security Number ☐☐☐ ☐☐ ☐☐☐☐

3. Time of the Injury ☐☐☐☐ ☐ am ☐ pm
hr min

4. Day of Week (Mon = 1, Tues = 2, etc.) ☐

5. Number of hours on job prior to the injury (on day of accident) ☐☐.☐ (list in 1/2 hour increments)

6. Type of accident site:
- ☐ Residential Route
- ☐ Commercial Route
- ☐ Roll Off Route
- ☐ Landfill
- ☐ Garage
- ☐ Clean-up Truck Route
- ☐ Office
- ☐ Office Yard
- ☐ Other ______________ (please list)

7. Collection Route No. (if applicable) ☐☐

8. Type of collection site: (if applicable)
- ☐ House & Apartments
- ☐ Business
- ☐ Public Institutions
- ☐ Hospital/Doctor's Office
- ☐ Other ______________ (please list)

9. Did the accident occur in an alley? ☐ Yes ☐ No

10. Crew size at time of injury (if applicable) ☐

11. Was the injured employee working in/on:
- ☐ Administration
- ☐ Clean-up Truck
- ☐ Roll-Off Truck
- ☐ Bulldozer
- ☐ Container Crew
- ☐ Load Lugger Crew
- ☐ Rear-end Loader Crew
- ☐ Garage Crew
- ☐ Other ______________ (please list)

12. Was the injured employee working at his regular job at the time of the injury? ☐ Yes ☐ No

If not, describe temporary job. ______________ (please list)

13. Did the accident occur while the injured employee was scavenging material from waste? ☐ Yes ☐ No ☐ Unknown/Uncertain

14. Was the injured employee known to be under the influence of alcohol or drugs at the time of the injury? ☐ Yes ☐ No ☐ Unknown/Uncertain

15. Was the injured employee involved in horseplay at the time of the injury? ☐ Yes ☐ No ☐ Unknown/Uncertain

16. Did the injury involve the combined actions of more than one worker? (e.g., two employees lifting a container together; a driver accelerates as helper tries to mount step, etc. ☐ Yes ☐ No

17. Did the accident occur while the employee was trying to get out of the way of a sudden danger? ☐ Yes ☐ No

18. Was the injured employee acting in a supervisory capacity at the time of the injury? ☐ Yes ☐ No

19. Was the injured employee being trained at the time of the injury? ☐ Yes ☐ No

20. Was the packing mechanism operating at the time of the injury? ☐ Yes ☐ No ☐ Not Applicable ☐ Unknown

21. If other employees were injured in this accident, please list their Injury Numbers. ☐☐☐☐ ☐☐☐☐

22. List identification codes for all equipment and vehicles that injured the employee or were in use at the time of the accident. ☐☐☐ ☐☐☐

23. Was the injured employee a casual laborer? ☐ Yes ☐ No ☐ Unknown

PART OF BODY INJURED

Check one and only one box which best describes the part of the body injured.

- ☐ **HEAD**
  - ☐ Scalp
  - ☐ Skull
  - ☐ Brain
  - ☐ Face
    - ☐ jaw
    - ☐ cheek
    - ☐ mouth, lip, teeth
    - ☐ forehead
    - ☐ nose
    - ☐ ears
    - ☐ eyes
    - ☐ other ________ (please list)
- ☐ **NECK**
- ☐ **UPPER EXTREMITIES**
  - ☐ Shoulder
  - ☐ Arm (upper/lower)
  - ☐ Elbow
  - ☐ Wrist
  - ☐ Hand
  - ☐ Fingers
  - ☐ Fingernails
  - ☐ Other ________ (please list)
- ☐ **TRUNK**
  - ☐ Back
  - ☐ Abdomen
  - ☐ Chest (Ribs)
  - ☐ Hips
  - ☐ Buttocks
  - ☐ Genitalia, Groin
  - ☐ Other ________ (please list)
- ☐ **LOWER EXTREMITIES**
  - ☐ Leg (upper/lower)
  - ☐ Knee
  - ☐ Ankle
  - ☐ Foot
  - ☐ Toes
  - ☐ Toenails
  - ☐ Other ________ (please list)
- ☐ **MULTIPLE PARTS INJURED**
- ☐ **OTHER** ________ (please list)

INJURY DESCRIPTION

Check one and only one box which best describes the injury sustained.

- ☐ Amputation, Avulsion
- ☐ Asphyxia, Strangulation, Drowning
- ☐ Bite from Animal
- ☐ Bite (Sting) from Insect
- ☐ Bruise, Contusion, Crushing
- ☐ Burn or Scald from Heat
- ☐ Burn from Chemical
- ☐ Concussion
- ☐ Contagious, Infectious Disease
- ☐ Cut, Laceration, Puncture
- ☐ Dental Injury
- ☐ Dermatitis, Rash
- ☐ Dislocation
- ☐ Electric Shock
- ☐ Foreign Object in Eye
- ☐ Fracture
- ☐ Freezing, Frostbite, Other Low Temperature Effects
- ☐ Hearing Loss or Impairment
- ☐ Hernia, Rupture
- ☐ Infection
- ☐ Inflammation of Joints, Tendons and Muscles
- ☐ Nosebleed
- ☐ Poisoning, Blood Poisoning
- ☐ Scratches (Superficial), Abrasions
- ☐ Sprain, Strain
- ☐ Sunburn
- ☐ Sunstroke, Heat Cramps, Heat Exhaustion
- ☐ Systemic Disorder (e.g., Allergy)
- ☐ Traumatic Shock
- ☐ Multiple Types of Injury
- ☐ Other ________ (please list)

PROTECTIVE CLOTHING BEING WORN AT THE TIME OF INJURY

Check as many boxes as necessary to describe the protective clothing being worn.

- ☐ Hardhat
- ☐ "Bump" Cap
- ☐ Gloves
- ☐ Safety Shoes
- ☐ Heavy Shoe, 6"
- ☐ Heavy Shoe, 9"
- ☐ Goggles
- ☐ Safety Glasses
- ☐ Ear Muffs
- ☐ Uniform (issued clothing)
- ☐ Cold Weather Gear
- ☐ Rain Gear
- ☐ Other ________ (please list)

ACCIDENT DESCRIPTION

What type of accident occurred?

Look at the left half of the page. For injuries involving two accident types: In Col. A, First Accident, check the accident type which was the first event in the accident. In Col. B, Accident Inflicting Injury, check the accident which inflicted the injury. (Example: employee fell from step and hit head on pavement. Check "Fall to a Different Level" in Col. A, and "Struck Against Object" in Col. B). For injuries involving only one accident type (e.g., insect bite): check the same accident type in both Columns A and B.

The right half of the page contains questions about the red-lettered accident types. If you have checked a red-lettered accident type see the section with the number indicated. Answer all questions in this section. DO NOT answer questions outside of this section.

	A First Accident	B Accident Inflicting Injury	
See 1	☐	☐	Foreign Object in Eye
	☐	☐	Hurt by Objects Being Handled
	☐	☐	Struck by Object (Except Vehicle)
	☐	☐	Struck Against Object (Except Vehicle)
See 2	☐	☐	Struck By Vehicle
	☐	☐	Struck Against Vehicle
See 3	☐	☐	Caught In Something
	☐	☐	Caught Between Two Objects
See 4	☐	☐	Fall to the Same Level
	☐	☐	Stumble, Trip, Slip, Loss of Balance (i.e., Without Falling)
See 5	☐	☐	Fall to a Different Level
See 6	☐	☐	Explosion or Fire
	☐	☐	Overexertion (e.g., Accident Occurred While Lifting)
	☐	☐	Dermatitis (e.g., Skin Rash)
	☐	☐	Insect Bite, Sting
	☐	☐	Animal Bite, Scratch (Dog, Cat, etc.)
	☐	☐	Rodent Bite, Scratch
	☐	☐	Stepped on Sharp Object (Nails, etc.)
	☐	☐	Inhale, Swallow or Come in Contact with Toxic Substance (Please list substance if known) ________
	☐	☐	Burn from Chemical (Please list chemical if known) ________
	☐	☐	Burn from Fly Ash
	☐	☐	Result of Aggressive Act (e.g., being deliberately punched by someone)
	☐	☐	Cave In
	☐	☐	Unknown
	☐	☐	No Specific or Single Event Can be Identified as the Cause of the Injury (e.g., back strain that developed gradually)
	☐	☐	Other ________ (please list)

1
- ☐ FOREIGN OBJECT IN EYE
- ☐ HURT BY OBJECTS BEING HANDLED
- ☐ STRUCK BY OBJECT (Except Vehicle)
- ☐ STRUCK AGAINST OBJECT (Except Vehicle)

What Was The Object? (Check one)

- ☐ Container
- ☐ Bulk container (1-6 yd)
- ☐ Bulk container (20-30 yd)
- ☐ Bulk container (35-40 yd)
- ☐ Bulk container lid
- ☐ Oil drum
- ☐ Fellow worker (unintentionally)
- ☐ Garage door
- ☐ Fences, gates, etc.
- ☐ Walls, beams, etc.
- ☐ Log, lumber, etc.
- ☐ Shrubbery
- ☐ Flying or falling debris
- ☐ Glass
- ☐ Hypodermic needles
- ☐ Fluorescent bulbs
- ☐ Other sharp object
- ☐ Furniture, appliances
- ☐ Hand tools
- ☐ Heavy equipment
- ☐ Noxious liquids
- ☐ Pavement, ground
- ☐ Other ________ (please list)

Was The Object Ejected From The Hopper?

- ☐ Yes
- ☐ No
- ☐ Unknown
- ☐ Not applicable

2
- ☐ STRUCK BY VEHICLE
- ☐ STRUCK AGAINST VEHICLE

Which Part? (Check one)

- ☐ Entire vehicle
- ☐ Windshield
- ☐ Cab of vehicle
- ☐ Cab door
- ☐ Side of vehicle
- ☐ Back of vehicle
- ☐ Truck hood
- ☐ Edge of hopper
- ☐ Blade of packer
- ☐ Reardoor of packer
- ☐ Step of packer
- ☐ Other ________ (please list)

Was The Vehicle: (Check one)

- ☐ Moving forward at curb speed
- ☐ Moving forward at regular speed
- ☐ Moving forward at highway speed
- ☐ Backing
- ☐ Not moving

3
- ☐ CAUGHT IN
- ☐ CAUGHT BETWEEN

- ☐ Packing mechanism
- ☐ Bulk container & wall or vehicle
- ☐ Edge of hopper & container
- ☐ Two containers
- ☐ Truck door
- ☐ Wall or fence & vehicle
- ☐ Two vehicles
- ☐ Other ________ (please list)

4
- ☐ FALL ON THE SAME LEVEL
- ☐ STUMBLE, TRIP, SLIP, LOSS OF BALANCE (without falling)

Was The Fall: (Check all that apply)

- ☐ On a slippery surface
- ☐ On an uneven surface (e.g., hole in ground
- ☐ Over objects on ground
- ☐ Over objects protruding from ground
- ☐ Other ________ (please list)

Location Of Fall (Check one)

- ☐ Landfill
- ☐ Alley
- ☐ Street
- ☐ Driveway
- ☐ Residential yard
- ☐ Employer's office
- ☐ Employer's garage
- ☐ Employer's yard
- ☐ Other ________ (please list)

Did The Fall Occur:

- ☐ Indoors
- ☐ Outdoors

5 ☐ FALL TO A DIFFERENT LEVEL

Location Of Fall

From	To
☐ Cab	☐ Ground
☐ Step (of vehicle)	☐ Floor
☐ Ladder	☐ Down embankment
☐ Curb	☐ Onto overturned container
☐ Stairs	☐ Other ________ (please list)
☐ Dock	
☐ Other ________ (please list)	

Did The Fall Occur:

- ☐ Indoors
- ☐ Outdoors

If The Fall Was From A Vehicle, Was The Vehicle: (Check one)

- ☐ Moving forward at curb speed
- ☐ Moving forward at regular speed
- ☐ Moving forward at highway speed
- ☐ Backing
- ☐ Not moving

6 ☐ EXPLOSION OR FIRE

Where Was The Fire? (Check one)

- ☐ In container
- ☐ In packer truck
- ☐ At landfill
- ☐ Other ________ (please list)

ACTIVITY DESCRIPTION

What was the injured employee doing at the time he was injured?

This page is divided into 11 sections. Each section has one or more activities which are listed in red. Most sections have questions which apply only to the activities in the section. Follow these steps to complete this page:

1. Check ONE AND ONLY ONE red-lettered activity, which BEST describes what the injured employee was doing.
2. Answer all of the questions in the section which contains the activity you chose in step one.
3. DO NOT check more than one activity. DO NOT answer questions outside of the section containing the activity you chose.

BE EXACT. For example, if the injured employee was "Carrying," the correct activity would be "Carrying," not "Standing, Walking."

☐ CARRYING

☐ MANUAL DUMPING OF CAN INTO OPERATING HOPPER

☐ MANUAL DUMPING OF CAN INTO NON-OPERATING HOPPER

☐ DUMPING INTO BULK CONTAINER

☐ THROWING

☐ CATCHING

☐ PUSHING/PULLING

☐ LIFTING

What was being carried, dumped, thrown, etc.? (Check as many as apply)

☐ Bulk container (1 to 6 yds)
☐ Standard container (30 gals)
☐ More than one container
☐ Plastic bag(s)
☐ 55 gal. oil drum
☐ Cardboard box
☐ Non-standard container(s) (other than above)
☐ Shrubbery - bundled
☐ Shrubbery - not bundled
☐ Furniture, appliances
☐ Other ______________ (please list)

Was the container: (Check as many as apply)

☐ Full
☐ Empty
☐ Overweight
☐ Oversized
☐ Slippery, wet
☐ Tightly packed
☐ Protruding with waste
☐ One with ragged edges
☐ One with broken or missing handles
☐ Frozen in
☐ Full of water
☐ A plastic can
☐ Not applicable
☐ Other ______________ (please list)

Was a co-worker helping the injured employee to carry, dump, throw, etc.?

☐ Yes
☐ No

☐ CONNECTING BULK CONTAINER

☐ DISCONNECTING BULK CONTAINER

To what was the bulk container being connected or disconnected? (Check one)

☐ To rear-end loader
☐ To winch hoist
☐ To roll-off
☐ To container delivery hoist
☐ To container delivery truck bed
☐ To load-lugger hoist
☐ To load-lugger bed
☐ To stationary compacter
☐ Other ______________ (please list)

☐ DRIVING
☐ RIDING
☐ MOUNTING
☐ DISMOUNTING

What was being driven, ridden, etc.? (Check one)

☐ Front-end loader
☐ Rear-end loader
☐ Roll-off
☐ Load-lugger
☐ Container delivery truck
☐ Highlift
☐ Pickup
☐ Automobile
☐ Scraper
☐ Compactor
☐ Bulldozer
☐ Other ______________ (please list)

What part of the vehicle or equipment was being driven, ridden, etc.? (Check one)

☐ Cab
☐ Step
☐ "Tracks"
☐ Running board
☐ Truck bed
☐ Hopper
☐ Other ______________ (please list)

Was the vehicle or equipment: (Check one)

☐ Moving forward at curb speed
☐ Moving forward at regular speed
☐ Moving forward at highway speed
☐ Backing
☐ Not moving

Was any part of the vehicle broken or malfunctioning?

☐ Yes
☐ No

If yes, what part?

______________ (please list)

☐ PUSHING DOWN WASTE INTO A CAN OR BULK CONTAINER (Not Dumping)

☐ PUSHING BACK WASTE INTO HOPPER BED (Not Dumping)

Was the hopper operating at the time the waste was pushed back?

☐ Yes
☐ No

☐ WASHING

☐ CLEANING AND CLEARING

☐ DISINFECTING

What was being washed, cleaned, or disinfected? (Check one)

☐ Vehicle or equipment
☐ Bulk container
☐ Walkways
☐ Driveways
☐ Hopper bed
☐ Truck bed
☐ Other ______________ (please list)

☐ OPERATING MACHINERY OR EQUIPMENT

What machine or piece of equipment was being operated? (Check one)

☐ Rear-end packing mechanism
☐ Front-end lifting mechanism
☐ Rear-end lifting mechanism
☐ Overhead hoist
☐ Load-lugger hoist
☐ Container delivery hoist
☐ Roll-off mechanism
☐ Bulldozer
☐ Other ______________ (please list)

Was any part of the equipment or machinery broken or malfunctioning?

☐ Yes
☐ No

If yes, what part?

______________ (please list)

☐ USING HAND TOOLS

☐ EMPTYING AT LANDFILL (Not Dumping)

What was being emptied? (Check one)

☐ Rear-end loader
☐ Front-end loader
☐ Bulk container (20 yds)
☐ Bulk container (30 yds)
☐ Bulk container (35 yds)
☐ Bulk container (40 yds)
☐ Other ______________ (please list)

☐ COMPLETING OPERATOR CHECK OF VEHICLE

☐ SCHEDULED MAINTENANCE AND REPAIR

☐ UNSCHEDULED MAINTENANCE AND REPAIR

What part of the vehicle was being checked, maintained, or repaired? (Check one)

☐ Chassis
☐ Engine
☐ Tires
☐ Packing mechanism
☐ Hoist and pulley mechanism
☐ Other ______________ (please list)

☐ MISCELLANEOUS SITE WORK (Other Than Above)

☐ CLERICAL/OFFICE WORK

☐ GUIDING OR DIRECTING VEHICLE OR EQUIPMENT

☐ STANDING OR WALKING ONLY (i.e., when not doing one of the other listed activities)

☐ OTHER ______________ (please list)

TRAFFIC ACCIDENT INFORMATION

COMPLETE THIS SECTION OF THE FORM ONLY IF THE INJURY RESULTED FROM A TRAFFIC ACCIDENT.*

1. Did the accident involve an employer-owned vehicle(s)?
   - ☐ Yes
   - ☐ No
   - ☐ Unknown

   If yes, list the equipment numbers:
   ☐☐☐
   ☐☐☐
   ☐☐☐

2. The accident involved:
   - ☐ One Vehicle
   - ☐ More Than One Vehicle
   - ☐ Other

3. The accident occurred:
   - ☐ On a Highway
   - ☐ On a Street
   - ☐ In an Alley
   - ☐ Other

4. How many pedestrians were injured:
   - ☐ Employees
   - ☐ Other Than Employees

5. Did an employee-driven vehicle strike the pedestrian(s)?
   - ☐ Yes
   - ☐ No
   - ☐ Unknown
   - ☐ Not Applicable

6. At the time of the accident, the injured employee was located:
   - ☐ On the curb nearest the vehicle being used
   - ☐ On the curb opposite the vehicle being used
   - ☐ In the street but next to the curb
   - ☐ In the middle of the street
   - ☐ In employer's yard
   - ☐ In the city yard
   - ☐ In cab of vehicle
   - ☐ In truck bed of vehicle
   - ☐ On step of vehicle
   - ☐ Other ____________ (please list)

ANSWER THE FOLLOWING QUESTIONS REGARDING THE EMPLOYER-OWNED VEHICLE ONLY:

7. Was the vehicle on a collection route at the time of the accident?
   - ☐ Yes
   - ☐ No
   - ☐ Unknown

8. Was the vehicle on a hill at the time of the accident?
   - ☐ Yes
   - ☐ No
   - ☐ Unknown

9. Was the vehicle:
   - ☐ Making Right Turn
   - ☐ Making Left Turn
   - ☐ Changing Lanes
   - ☐ Passing
   - ☐ Pulling Out
   - ☐ Backing
   - ☐ Making a "U" Turn
   - ☐ Going Straight Ahead
   - ☐ Parked at Curb
   - ☐ Stopped in Middle of Street - No Car in Front
   - ☐ Stopped in Traffic - Car in Front
   - ☐ Slowing or Stopping
   - ☐ Other ____________ (please list)

10. Were there any witnesses to the accident?
    - ☐ Yes
    - ☐ No
    - ☐ Unknown

*A traffic accident is any accident, resulting in injury to an employee(s), which involves a vehicle or wheeled piece of equipment hitting or being hit by: (1) another vehicle or wheeled piece of equipment; (2) a pedestrian; (3) a wall, post or other object.

OUTDOOR CONDITIONS

Check as many boxes as necessary to describe the outdoor conditions at the time of the injury.

☐ None
☐ Uneven Surfaces/ Hole in the Ground
☐ Slippery Surfaces
☐ Wet Grass
☐ Mud
☐ Objects on the Ground
☐ Objects Protruding from Ground
☐ Hot Weather
☐ Cold Weather
☐ Rain
☐ High Winds
☐ Animals (Dogs, Cats, etc.)
☐ Insects
☐ Rodents
☐ Posts, Fences, Walls, Gates
☐ Shrubbery
☐ Poison Ivy, Poison Oak
☐ Dust, Ashes in Air
☐ Exhaust Fumes, Vapors
☐ Wires, Cables Washlines
☐ Excessive Noise
☐ Glare
☐ Snow
☐ Shrubbery
☐ Icy Surfaces
☐ Gravel, Slag, etc., on Surface
☐ Freezing Rain
☐ Other ______________ (please list)

CHARACTERISTICS OF WASTE

Check as many boxes as necessary to describe the type of waste being handled at the time of the injury.

☐ Hypodermic Needles
☐ Sharp Objects (Except Hypodermic Needles)
☐ Wet, Watersoaked
☐ Aerosol Cans
☐ Rats, Hostile Creatures
☐ Rocks, Concrete Chunks, etc.
☐ Noxious Liquids
☐ Fluorescent Bulbs
☐ Glass (Other than Fluorescent Bulbs)
☐ Thorns, Shrubbery
☐ Hot Ashes
☐ Dust, Ashes, Foreign Particles
☐ Protruding Objects, Unspecified
☐ Dead Animals
☐ Normal/Dry
☐ Frozen (Waste)
☐ Other ______________________ (please list)

IN YOUR OWN WORDS, DESCRIBE THE ACCIDENT IN DETAIL. BE SURE TO INCLUDE:

(1) Any information about the accident which you could not include elsewhere in this form;
(2) The events immediately preceding the injury and those following;
(3) How the accident occurred and what injuries were sustained;
(4) What the injured employee was doing at the time he was injured; and,
(5) Any special factors which you think contributed to the injury.

1 2 3 4 — 5 6 7

0138 - 0 7 8

EXHIBIT 18

COSTS AND LOST TIME DATA

1. Date this section of the form completed.

8 9	10 11	12 13
☐☐	☐☐	☐☐
mo	day	yr

2. Is this injury case closed? (i.e., all costs and days lost for this injury are now known)

14
1 Yes
2 No

FIRST AID INJURY

3. Was this a first aid injury? (i.e., no medical costs or lost time) If yes, do not complete the remainder of this form.

15
1 Yes
2 No

MEDICAL COSTS

(All associated medical costs as of the date this form completed)

4. Medical costs to the nearest dollar.

16 17 18 19
☐☐☐☐

LOST TIME INJURY

Days Lost/Cost Data

(All associated days lost and costs as of the date this form completed)

1. Total number of days lost (calendar days) — 20 21 ☐☐

2. Total number of work days lost — 22 23 ☐☐

3. Number of days lost without compensation — 24 25 ☐☐

4. Number of days lost charged to Workmen's Compensation — 26 27 ☐☐

5. Workmen's Compensation payments — 28 29 30 31 ☐☐☐☐

6. Number of days lost charged to Injury Leave — 32 33 ☐☐

7. Payments charged to Injury Leave — 34 35 36 37 ☐☐☐☐

8. Number of days lost charged to Sick Leave — 38 39 ☐☐

9. Payments charged to Sick Leave — 40 41 42 43 ☐☐☐☐

10. Number of days lost charged to Vacation Leave — 44 45 ☐☐

11. Payments charged to Vacation Leave — 46 47 48 49 ☐☐☐☐

LOST TIME INJURY (Continued)

Return to Work Data

1. Return to work date (to regular job classification only)	50 51 ☐☐ mo 52 53 ☐☐ day 54 55 ☐☐ yr

Light Duty

2. Did the injured employee return to his regular job classification?	56 1 Yes 2 No
3. If not, to what classification did he return? ____________________ (please list)	57 58 ☐☐ (please leave blank)
4. Date returned to non-regular job classification (if applicable)	59 60 ☐☐ mo 61 62 ☐☐ day 63 64 ☐☐ yr

Permanent Job Change

5. Did the injury require a permanent change of job classification or permanent termination?	65 1 Yes 2 No
6. If yes, to what classification? __________________________ (please list)	66 67 ☐☐ (please leave blank)

73	74	75	76	77	78	79	80
I	N	J	U	R	Y		8

EXHIBIT 19

INJURY LOG

DATE	TAPE	SIDE	USER	DATE	SS#	NAME	DIST.
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		
				/ /	- -		

EXHIBIT 20

WORKDAYS LOST & DIRECT COSTS DATA SHEET

IF YOU HAVE THIS DATA ON YOUR OWN FORM OR PRINTOUT, SIMPLY ATTACH. DIRECTIONS: Enter the final costs and actual workdays lost, if you know them. If you do not know them, enter the costs and workdays lost KNOWN TO DATE. Indicate whether the costs and workdays lost you've given for an injury are final in Col. 21. Use codes shown below. See directions below for leave benefits. Attach comments if necessary.

User Name:__________ User No.______ Quarter:______ Person Completing This Sheet:__________ Phone:__________

Name and Social Security No. of Injured Employee (1)	Date of injury (2)	Extent of injury (see codes A-F below) (3)	Medical Costs (4)	Date returned to work (0 = still off) (5)	Total no. of workdays lost (6)	Worker's Compensation		Injury Leave		Sick Leave		Vacation or Other Leave		Workdays lost without compensation (15)	TOTAL costs of leave benefits (16)	PERMANENT disability or death benefits (17)	Other misc. costs (18)	No. days of restricted or light duty (19)	Did injury result in PERMANENT job change or transfer? (20)	Are these costs & days lost FINAL? (21)
						Days lost charged to: (7)	Temporary dis.benefits paid (8)	Days lost charged to: (9)	Costs of: (10)	Days lost charged to: (11)	Costs of: (12)	Days lost charged to: (13)	Costs of: (14)							

Extent of Injury Codes (for Col. 3.)(See BACK for complete definitions.)

A - First Aid Injury - does NOT require medical treatment by physician.
B - Non-fatal without lost workdays - requires treatment by physician.
C - Lost Workday Case - resulted in days lost BEYOND day of injury
D - Permanent Partial Disability
E - Permanent Total Disability
F - Fatality

INSTRUCTIONS FOR DAYS LOST & LEAVE BENEFITS:

Round days to the nearest whole day, and dollars to the nearest whole dollar. More than one type of leave may be involved, e.g., an employee may receive no compensation for the first 3 days and a combination of Worker's Comp. and Injury Leave pay for the remaining days. Therefore, days lost may be entered twice (e.g., a day may be charged to both Worker's Compensation and Injury Leave) but DO NOT DUPLICATE COSTS (e.g., if Worker's Compensation costs are deducted from Injury Leave payments, enter each portion separately).

A - **FIRST AID INJURY** - an injury requiring no medical treatment or only one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care even though provided by a physician or registered professional personnel.

B - **NONFATAL CASE WITHOUT LOST WORKDAYS** - an injury that REQUIRED medical treatment administered by a physician or by a registered professional personnel under standing orders of a physician, but did not result in lost workdays, permanent disability or a fatality.

C - **LOST WORKDAYS CASE** - an injury that results in one or more workdays lost not including the day of the injury or day of return, but did not result in a permanent disability or a fatality.

C1 - IF THIS INJURY, AT ANY TIME DURING THE ACCIDENT OR THE EMPLOYEE'S RECOVERY, RESULTED IN A LOSS OF CONSCIOUSNESS (EVEN IF THE LOSS OF CONSCIOUSNESS WAS TEMPORARY AND DID NOT RESULT IN LOST WORKDAYS)

C2 - IF THIS INJURY, AT ANY TIME DURING THE ACCIDENT OR THE EMPLOYEE'S RECOVERY, RESULTED IN RESTRICTION OF WORK OR MOTION (EVEN IF THE RESTRICTION OF WORK OR MOTION WAS TEMPORARY AND DID NOT RESULT IN LOST WORKDAYS)

D - **PERMANENT PARTIAL DISABILITY** - an injury or combination of injuries, sustained in one accident, which results in one or more of the following: (1) Amputation of all or part of: a finger, thumb, hand, toe, foot, ankle, arm, or leg; (2) Permanent impairment of function resulting in loss of sight in one or both eyes, loss of hearing in one or both ears, or an unrepaired hernia.

E - **PERMANENT TOTAL DISABILITY** - an injury or combination of injuries, sustained in one accident, which results in one or more of the following: (1) permanently and totally incapacitating the injured employee from following any gainful occupation; or (2) the loss of or loss of use of, both hands, both arms, both legs, both feet, both eyes, or the loss of any two of these (e.g., an eye and a foot).

F - **FATALITY** - an occupational injury or combination of injuries, sustained in one accident, resulting in death regardless of the length of time between the injury and the death.

EXHIBIT 21

INJURY CODING SYSTEM

ACCIDENT TYPE PHRASES

1. WAS INJURED IN VEHICLE COLLISION - 10
2. WAS INJURED DUE TO VEHICLE MOVEMENT - 20
3. WAS STRUCK BY VEHICLE PART - 31
4. WAS STRUCK BY OBJECT - 32
5. WAS STRUCK BY CONTAINER - 33
6. WAS STRUCK BY WASTE - 34
7. STRUCK SELF WITH VEHICLE PART - 41
8. STRUCK SELF WITH OBJECT - 42
9. STRUCK SELF WITH CONTAINER - 43
10. STRUCK SELF WITH WASTE - 44
11. STRUCK AGAINST VEHICLE PART - 51
12. STRUCK AGAINST OBJECT - 52
13. STRUCK AGAINST CONTAINER - 53
14. STRUCK AGAINST WASTE - 54
15. WAS HURT BY HANDLING VEHICLE PART - 61
16. WAS HURT BY HANDLING OBJECT - 62
17. WAS HURT BY HANDLING CONTAINER - 63
18. WAS HURT BY HANDLING WASTE - 64
19. GOT AIRBORNE PARTICLES IN EYE - 72-0-0-0
20. GOT WASTE PARTICLES IN EYE - 74-0-0-0
21. FELL TO A DIFFERENT LEVEL - 80
22. FELL ON SAME LEVEL - 90
23. FELL AGAINST VEHICLE - 101
24. FELL AGAINST OBJECT - 102
25. FELL AGAINST CONTAINER - 103
26. FELL AGAINST WASTE - 104
27. SLIPPED TO A DIFFERENT LEVEL - 110
28. SLIPPED ON SAME LEVEL - 120
29. SLIPPED AND STRUCK AGAINST VEHICLE - 131
30. SLIPPED AND STRUCK AGAINST OBJECT - 132
31. SLIPPED AND STRUCK AGAINST CONTAINER - 133
32. SLIPPED AND STRUCK AGAINST WASTE - 134
33. MADE SUDDEN MOVEMENT - 140-0-0-0
34. MADE SUDDEN MOVEMENT WHILE CATCHING VEHICLE - 151-0-0-0
35. MADE SUDDEN MOVEMENT WHILE CATCHING OBJECT - 152
36. MADE SUDDEN MOVEMENT WHILE CATCHING CONTAINER - 153
37. MADE SUDDEN MOVEMENT WHILE CATCHING WASTE - 154
38. MADE SUDDEN MOVEMENT WHILE AVOIDING VEHICLE - 161-0-0-0
39. MADE SUDDEN MOVEMENT WHILE AVOIDING OBJECT - 162
40. MADE SUDDEN MOVEMENT WHILE AVOIDING CONTAINER - 163
41. MADE SUDDEN MOVEMENT WHILE AVOIDING WASTE - 164
42. OVEREXERTED SELF - 170-0-0-0
43. OVEREXERTED SELF WITH VEHICLE PART - 172
44. OVEREXERTED SELF WITH OBJECT - 173
45. OVEREXERTED SELF WITH CONTAINER - 174
46. OVEREXERTED SELF WITH WASTE
47. WAS CAUGHT BETWEEN OBJECTS - 180
48. CONTACTED ELECTRIC CURRENT - 190-0-0-0
49. CONTACTED CAUSTIC OR TOXIC SUBSTANCE - 205
50. CONTACTED CAUSTIC OR TOXIC WASTE - 204
51. CONTACTED ALLERGENIC SUBSTANCE - 215

ACCIDENT TYPE PHRASES (continued)

52. CONTACTED ALLERGENIC WASTE - 214
53. INJURED DUE TO WEATHER EXTREMES - 220-0-0-0
54. CONTACTED HOT VEHICLE PART - 231
55. CONTACTED HOT OBJECT - 232
56. CONTACTED HOT SUBSTANCE - 235
57. WAS STUNG BY INSECT - 240-0-0-0
58. WAS BIT BY ANIMAL - 250-0-0-0
59. STEPPED ON SHARP OBJECT - 262
60. STEPPED ON SHARP WASTE - 264
61. WAS INJURED FROM AGGRESSIVE ACT - 270-0-0-0
62. SUSTAINED FLASHBURN - 280-0-0-0
63. DEVELOPED INJURY OVER TIME - 970-0-0-0
64. WAS INJURED IN UNKNOWN ACCIDENT - 980-0-0-0
65. WAS INJURED IN OTHER TYPE OF ACCIDENT - 990-0-0-0

ACCIDENT TYPE CODING LIST

(Answer all three subsets)

1. WAS INJURED IN VEHICLE ACCIDENT - 10

subset one

was struck by veh - 201
was injured when veh was hit by another veh - 202
was injured when veh hit curbing - 204
was injured when veh hit rock - 205
was injured when veh collided with object - 206
was caught between moving veh and obj - 207
was injured when moving veh hit another veh - 208
was injured in unk vehicle accident - 298
was injured in other vehicle accident - 200

subset two

N/A - 0
and fell off - 1601
and struck against veh - 1602
and he slipped - 1603
and he made a sudden movement - 1604
subset three - 0

2. WAS INJURED DUE TO VEHICLE MOVEMENT - 20

subset one

when veh overturned - 1401
when veh made sudden stop - 1402
when veh made sudden start - 1403
when veh made sudden turn - 1404
when veh went over a bump or depression - 1405
when veh became out of control - 1406
when veh went over rough terrain - 1407
when veh jacknifed - 1408
when veh jerked suddenly - 1499

subset two

N/A - 0
and fell off - 1601
and struck against veh - 1602
and he slipped - 1603
and he made a sudden movement - 1604

subset three - 0

ACCIDENT TYPE CODING LIST (Continued)

3. WAS STRUCK BY VEHICLE PART - 31

blade of veh - 102,0,0
cab door - 104,0,0
handle of veh - 108,0,0
hood of veh - 109,0,0
packing mechanism lever - 111,0,0
radiator cap - 112,0,0
tailgate - 118,0,0
tongue of trailer - 119,0,0
trailer ramp - 123,0,0
boom controls - 124,0,0
lift gate - 126,0,0
turnbuckle - 127,0,0
cable - 128,0,0
emptying lever - 129,0,0
mechanism arm - 131,0,0
rear access door - 132
safety door - 133
dragboard - 135
unk veh part - 198,0,0
other veh part - 199,0,0

4. WAS STRUCK BY OBJECT - 32

cable - 302,0,0
coworker (unintentionally) - 303,0,0
equipment part - 305,0,0
garage door - 307,0,0
gate - 309,0,0
hand tool - 322,0,0
obj thrown up by moving equip - 326,0,0
obj handled by coworker - 314,0,0
shrubbery - 317,0,0
water hose - 327,0,0
unk obj - 398,0,0
other obj - 399,0,0

5. WAS STRUCK BY CONTAINER - 33

standard metal cont - 401,0,0
nonstandard metal cont - 402,0,0
container lid - 403,0,0
container handled by coworker - 404,0,0
tote barrel - 419,0,0
wheeled cart - 405,0,0
bulk container (1-10 yd) - 406,0,0
bulk container (11-25 yd) - 407,0,0
bulk container (over 25 yd) - 408,0,0
bulk container lid - 409,0,0
bulk container handled by coworker - 410,0,0

ACCIDENT TYPE CODING LIST (Continued)

5. 300 gal plastic cont - 411,0,0
   plastic can - 412,0,0
   oil drum - 413,0,0
   cardboard box - 414,0,0
   crate - 415,0,0
   cardboard barrel - 416,0,0
   plastic bag - 417,0,0
   compressed waste bag - 418,0,0
   litter can - 420,0,0
   unk container - 498,0,0
   other container type - 499,0,0

6. WAS STRUCK BY WASTE - 34

   subset one

   acid - 501
   aerosol can - 502
   aerosol spray - 503
   appliance - 504
   bleach - 505
   board with nail - 506
   bottle - 528
   ammonia - 532
   dead animal - 531
   equipment part - 533
   cardboard slats - 507
   ceramic waste - 529
   fiberglass - 508
   flourescent bulb - 509
   furniture - 510
   glass - 511
   grass/weeds/leaves - 512
   hypodermic needle - 513
   mattress - 514
   nail - 530
   noxious chemical - 515
   other sharp obj - 516
   palm fronds - 517
   particles in waste - 518
   piece of metal - 519
   poison ivy/oak - 520
   printed matter - 521
   rocks/concrete/dirt - 522
   rug - 523
   shrubbery-bundled - 524
   shrubbery-unbundled - 525
   waste handled by coworker - 526
   wood - 527
   unk waste - 598
   other waste - 599

6. subset two

which was ejected from veh - 1001
which was swinging around in hopper - 1002
which fell out of veh - 1003
which fell out of top of cont - 1004
which broke against veh - 1005
which was protruding from veh - 1006
which fell out of bottom of cont - 1007
N/A - 0

subset three = 0

7. STRUCK SELF WITH VEHICLE PART - 41

accelerator pedal - 125,0,0
boom controls - 124,0,0
turnbuckle - 127,0,0
cable - 128,0,0
cab door - 104,0,0
handle of veh - 108,0,0
hood of veh - 109,0,0
inside of cab - 110,0,0
packing mechanism lever - 111,0,0
steering wheel - 116,0,0
tailgate - 118,0,0
tongue of trailer - 119,0,0
cab of veh - 121,0,0
trailer ramp - 123,0,0
lift gate - 126,0,0
emptying lever - 129,0,0
mechanical arm - 131,0,0
rear access door - 132,0,0
safety door - 133,0,0
gears - 136,0,0
unk veh part - 198,0,0
other veh part - 199,0,0

8. STRUCK SELF WITH OBJECT - 42

cable - 302,0,0
equipment part - 305,0,0
garage door - 307,0,0
gate - 309,0,0
hand tool - 322,0,0
saw - 324,0,0
shovel/fork - 316,0,0
wrench - 321,0,0
hammer - 311,0,0
water hose - 327,0,0
unk obj - 398,0,0
other obj - 399,0,0

9. STRUCK SELF WITH CONTAINER - 43

subset one

standard metal cont - 401
nonstandard metal cont - 402
container lid - 403
tote barrel - 419
wheeled cart - 405
bulk container (1-10 yd) - 406
bulk container (11-25 yd) - 407
bulk container (over 25 yd) - 408
bulk container lid - 409
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardboard box - 414
crate - 415
cardboard barrel - 416
plastic bag - 417
compressed waste bag - 418
litter can - 420
unk container - 498
other container type - 499

subset two

which was full - 1
which was empty - 2
which was unusually heavy - 3
which was heavy due to being full of rocks - 4
which was heavy due to being water filled - 5
which was heavy due to being tightly packed - 6
which was heavy due to being full of yard clippings - 7
which was heavy due to being full of paper - 8
which was heavy due to being full of wood - 9
which had protruding waste - 10
which had protruding glass - 11
which had a protruding hypodermic needle - 12
which had protruding shrubbery - 13
which had protruding nail - 25
which was heavy due to frozen waste - 16
N/A - 0

subset three

and was unusually large - 17
and was slippery (wet) - 18
and had sharp edges - 19
and had missing handles - 20
and on which the handle broke - 21

subset three (continued)

9. and was being handled with other cont - 22
and had a rat or other creature in it - 24
and had protruding waste - 10
and had protruding glass - 11
and had a protruding hypodermic needle - 12
and had a protruding nail - 25
and had protruding shrubbery - 13
and had slipped from his hands - 27
N/A - 0
and cont was handled with coworker - 31

10. STRUCK SELF WITH WASTE - 44

subset one

aerosol can - 502
appliance - 504
board with nail - 506
bottle - 528
cardboard slats - 507
ceramic waste - 529
fluorescent bulb - 509
furniture - 510
animal - 531
equipment part - 533
glass - 511
mattress - 514
other sharp obj - 516
palm fronds - 517
piece of metal - 519
printed matter - 521
rocks/concrete/dirt - 522
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
wood - 527
unk waste - 598
other waste - 598

subset two

which was handled with coworker - 1031
which had slipped from his hands - 1027
N/A - 0

subset three - 0

ACCIDENT TYPE CODING LIST (Continued)

11. STRUCK AGAINST VEHICLE PART - 51

back of veh - 101,0,0
blade of vehicle - 102,0,0
brakes - 103,0,0
cab door - 104,0,0
edge of hopper - 105,0,0
exhaust pipe - 106,0,0
front of veh - 107,0,0
handle of veh - 108,0,0
hood of veh - 109,0,0
inside of cab - 110,0,0
packing mechanism lever - 111,0,0
radiator cap - 112,0,0
running board - 113,0,0
side of hopper - 114,0,0
side of veh - 115,0,0
steering wheel - 116,0,0
boom controls - 124,0,0
lift gate - 126,0,0
turnbuckle - 127,0,0
cable/chain - 128,0,0
emptying lever - 129,0,0
engine - 130,0,0
mechanical arm - 131,0,0
access door - 132,0,0
safety door - 133,0,0
fender - 134,0,0
dragboard - 135,0,0
gears - 136,0,0
step of veh - 117,0,0
tailgate - 118,0,0
tire - 122,0,0
tongue of trailer - 119,0,0
windshield - 120,0,0
cab of veh - 121,0,0
trailer ramp - 123,0,0
unk veh part - 198,0,0
other veh part - 199,0,0

12. STRUCK AGAINST OBJECT - 52

cable - 302,0,0
equipment part - 305,0,0
fence - 306,0,0
garage door - 307,0,0
garbage can rack - 308,0,0
gate - 309,0,0
ground - 310,0,0
hand tool - 322,0,0

ACCIDENT TYPE CODING LIST (Continued)

12. obj handled by coworker - 314,0,0
    obj protruding from ground - 325,0,0
    post - 315,0,0
    saw - 324,0,0
    shovel/fork - 316,0,0
    shrubbery - 317,0,0
    wall - 319,0,0
    wrench - 321,0,0
    hammer - 311,0,0
    unk obj - 398,0,0
    other obj - 399,0,0

13. STRUCK AGAINST CONTAINER - 53

    standard metal cont - 401,0,0
    nonstandard metal cont - 402,0,0
    container lid - 403,0,0
    container handled by coworker - 404,0,0
    tote barrel - 419,0,0
    wheeled cart - 405,0,0
    bulk container (1-10 yd) - 406,0,0
    bulk container (11-25 yd) - 407,0,0
    bulk container (over 25 yd) - 408,0,0
    bulk container lid - 409,0,0
    bulk container handled by coworker - 410,0,0
    300 gal plastic cont - 411,0,0
    plastic can - 412,0,0
    oil drum - 413,0,0
    cardboard box - 414,0,0
    crate - 415,0,0
    cardboard barrel - 416,0,0
    plastic bag - 417,0,0
    compressed waste bag - 418,0,0
    litter can - 420,0,0
    unk container - 498,0,0
    other container type - 499,0,0

14. STRUCK AGAINST WASTE - 54

    subset one

    appliance - 504
    board with nail - 506
    carboard slats - 507
    ceramic waste - 529
    furniture - 510
    mattress - 514
    palm fronds - 517
    piece of metal - 519
    printed matter - 521

ACCIDENT TYPE CODING LIST (Continued)

subset one (continued)

14. rocks/concrete/dirt - 522
    rug - 523
    shrubbery-bundled - 524
    shrubbery-unbundled - 525
    waste handled by coworker - 526
    wood - 527
    unk waste - 598
    other waste - 599
    dead animal - 531
    equipment part - 533

subset two

which fell out of veh - 1003
which fell out of top of cont - 1004
which fell out of bottom of cont - 1007
which broke against veh - 1005
which was protruding from veh - 1006
N/A - 0

15. WAS HURT BY HANDLING VEHICLE PART - 61

cab door - 104,0,0
handle of veh - 108,0,0
packing mechanism lever - 111,0,0
steering wheel - 116,0,0
tailgate - 118,0,0
trailer ramp - 123,0,0
boom controls - 124,0,0
lift gate - 126,0,0
turnbuckle - 127,0,0
cable - 128,0,0
emptying lever - 129,0,0
engine - 130,0,0
mechanical arm - 131,0,0
access door - 132,0,0
safety door - 133,0,0
dragboard - 135,0,0
gears - 136,0,0
unk veh part - 198,0,0
other veh part - 199,0,0

subset three - 0

16. WAS HURT BY HANDLING OBJECT - 62

cable - 302,0,0
equipment part - 305,0,0
fence - 306,0,0
garage door - 307,0,0
garbage can rack - 308,0,0
gate - 309,0,0
hand tool - 322,0,0

post - 315,0,0
saw - 324,0,0
shovel/fork - 316,0,0
wood - 320,0,0
wrench - 321,0,0
hammer - 311,0,0
unk obj - 398,0,0
other obj - 399,0,0

17. WAS HURT BY HANDLING CONTAINER - 63

subset one

standard metal cont - 401
nonstandard metal cont - 402
container lid - 403
tote barrel - 419
wheeled cart - 405
bulk container (1-10 yd) - 406
bulk container (11-25 yd) - 407
bulk container (over 25 yd) - 408
bulk container lid - 409
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardboard box - 414
crate - 415
cardboard barrel - 416
plastic bag - 417
compressed waste bag - 418
litter can - 420
unk container - 498
other container type - 499

subset two

which was full - 1
which was empty - 2
which had protruding waste - 10
which had protruding glass - 11
which had a protruding hypodermic needle - 12
which had protruding shrubbery - 13
which had protruding nail - 25
N/A - 0

ACCIDENT TYPE CODING LIST (Continued)

17. subset three

and had sharp edges - 19
and had missing handles - 20
N/A - 0

18. WAS HURT BY HANDLING WASTE - 64

aerosol can - 502,0,0
appliance - 504,0,0
board with nail - 506,0,0
bottle - 528,0,0
cardboard slats - 507,0,0
ceramic waste - 529,0,0
fiberglass - 508,0,0
fluorescent bulb - 509,0,0
furniture - 510,0,0
glass - 511,0,0
grass/weeds/leaves - 512,0,0
hypodermic needle - 513,0,0
mattress - 514,0,0
other sharp obj - 516,0,0
palm fronds - 517,0,0
equipment part - 533,0,0
piece of metal - 519,0,0
printed matter - 521,0,0
rocks/concrete/dirt - 522,0,0
rug - 523,0,0
shrubbery-bundled - 524,0,0
shrubbery-unbundled - 525,0,0
wood - 527,0,0
unk waste - 598,0,0
other waste - 599,0,0

19. GOT AIRBORNE PARTICLES IN EYE - 72,0,0,0

20. GOT WASTE PARTICLES IN EYE - 74,0,0,0

21. FELL TO A DIFFERENT LEVEL - 80

subset one - condition of surface slipped off of

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A or unk - 0

subset two - surface slipped off of

cab - 925
chair - 902
curb - 903
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909 - no subset three
tailgate - 928
trailer - 929

ACCIDENT TYPE CODING LIST (Continued)

21. subset two (continued)

inclined ground - 910 - no subset three
inclined ramp - 911 - no subset three
inclined pavement - 912 - no subset three
ladder - 913
loading dock - 914
running board - 918
stairs - 919 - no subset three
step of veh - 920
truck bed - 921
vehicle - 922
unk surface - 998
other surface - 999

subset three - surface fell onto

onto brick walkway - 1301
into depression - 1304
onto floor - 1305
onto grass - 1306
onto gravel - 1307
onto ground - 1308
into incinerator pit - 1327
onto inclined grass - 1309
onto inclined ground - 1310
onto inclined ramp - 1311
onto inclined pavement - 1312
onto loading dock - 1314
onto meter - 1324
onto pavement - 1317
onto unk surface - 1398
onto other surface - 1399

22. FELL ON SAME LEVEL - 90

subset one

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two

brick walkway - 901
depression - 904
floor - 905
grass - 906

ACCIDENT TYPE CODING LIST (Continued)

22. subset two (continued)

gravel - 907
ground - 908
hopper - 926

incinerator pit - 927
tailgate - 928
trailer - 929

loading dock - 914
meter - 924
obj on ground - 915
obj protruding from ground - 916
pavement - 917
truck bed - 921

waste on ground - 923
unk surface - 998
other surface - 999

subset three - Change in level

while stepping down - 901
while stepping up - 902
N/A - 0

23. FELL AGAINST VEHICLE - 101

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A or unk - 0

subset two - surface fell while on

brick walkway - 901
cab - 925
chair - 902
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907

tailgate - 928
trailer - 929

ACCIDENT TYPE CODING LIST (Continued)

23. subset two (continued)

ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
loading dock - 914
meter - 924
obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918

step of veh - 920
truck bed - 921
vehicle - 922
waste on ground - 923
unk surface - 998
other surface - 999

subset three

and struck against back of veh - 101
and struck against blade of veh - 102
and struck against cab door - 104
and struck against edge of hopper - 105
and struck against exhaust pipe - 106
and struck against radiator cap - 112
and struck against front of veh - 107
and struck against handle of veh - 108
and struck against hood of veh - 109
and struck against inside of cab - 110
and struck against packing mechanism lever - 111
and struck against running board - 113
and struck against side of hopper - 114
and struck against side of veh - 115
and struck against steering wheel - 116
and struck against step of veh - 117
and struck against tailgate - 118
and struck against tongue of trailer - 119
and struck against windshield - 120
and struck against lift gate - 126
and struck against turnbuckle - 127
and struck against cable - 128
and struck against trailer ramp - 123
and struck against emptying lever - 129
and struck against mechanical arm - 131
and struck against access door - 132
and struck against safety door - 133
and struck against fender - 134
and struck against boom controls - 124

ACCIDENT TYPE CODING LIST (Continued)

23. subset three (continued)

and struck against dragboard - 135
and struck against gears - 136
and struck against unk veh part - 198
and struck against other veh part - 199

24. FELL AGAINST OBJECT - 102

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two - surface fell while on

brick walkway - 901
cab - 925
chair - 902
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
loading dock - 914
meter - 924
obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918
stairs - 919
step of veh - 920
truck bed - 921
vehicle - 922
waste on ground - 923
unk surface - 998
other surface - 999

incinerator pit - 927
tailgate - 928

subset three

and struck against fence - 306
and struck against garage door - 307
and struck against garbage can rack - 308
and struck against gate - 309
and struck against post - 315
and struck against shrubbery - 317
and struck against wall - 319
and struck against wood - 320
and struck against unk obj - 398
and struck against other obj - 399

25. FELL AGAINST CONTAINER - 103

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two - surface fell while on

brick walkway - 901
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907
ground - 908
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
loading dock - 914
meter - 924
obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918
stairs - 919
step of veh - 920
truck bed - 921
waste on ground - 923
unk surface - 998
other surface - 999

ACCIDENT TYPE CODING LIST (Continued)

25. subset three

and struck against std metal container - 401
and struck against nonstd metal container - 402
and struck against container lid - 403
and struck against wheeled cart - 405
and struck against tote barrel - 419
and struck against bulk cont (1-10 yd) - 406
and struck against bulk cont (11-25 yd) - 407
and struck against bulk cont (over 25 yd) - 408
and struck against bulk cont lid - 409
and struck against 300 gal plastic cont - 411
and struck against plastic can - 412
and struck against oil drum - 413
and struck against cardboard box - 414
and struck against crate - 415
and struck against cardboard barrel - 416
and struck against plastic bag - 417
and struck against compressed waste bag - 418
and struck against litter can - 420
and struck against unk cont - 498
and struck against other cont - 499

26. FELL AGAINST WASTE - 104

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two - surface fell while on

brick walkway - 901
cab - 925
chair - 902
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
loading dock - 914
meter - 924
obj on ground - 195
obj protruding from ground - 91
pavement - 917
running board - 918
stairs - 919
step of vehicle - 920
truck bed - 921
vehicle - 922
waste on ground - 923
unk surface - 998
other surface - 999

ACCIDENT TYPE CODING LIST (Continued)

subset three

NA - 0
furniture - 510
mattress - 514
piece of metal - 519
equipment - 533
shrubbery - bundled - 524
shrubbery - unbundled - 525
rocks/concrete/dirt - 522
wood - 527

27. SLIPPED TO A DIFFERENT LEVEL - 110

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two - surface slipped on

cab - 925
chair - 902
curb - 903
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911 subset 3 = 0
inclined pavement - 912
ladder - 913
loading dock - 914
running board - 918
stairs - 919
step of veh - 920
truck bed - 921
vehicle - 911
unk surface - 998
other surface - 999

tailgate - 928
trailer - 929

ACCIDENT TYPE CODING LIST (Continued)

27. subset three - surface landed on

onto curb - 903
onto brick walkway - 1301
into depression - 9304
onto floor - 1305
onto grass - 1306
onto gravel - 1307
onto ground - 1308
into incinerator pit - 1327

onto loading dock - 1314
onto meter - 1324
onto pavement - 1317
onto unk surface - 1398
onto other surface - 1399
N/A - 0

28. SLIPPED ON SAME LEVEL - 120

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two - surface slipped on

brick walkway - 901
cab - 925
chair - 902
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
loading dock - 914
meter - 924
incinerator pit - 927
tailgate - 928

ACCIDENT TYPE CODING LIST (Continued)

28. subset two (continued)

obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918
stairs - 919
step of veh - 920
truck bed - 921
vehicle - 922
waste on ground - 923
unk surface - 998
other surface - 999

subset three

while stepping down - 901
N/A - 0
while stepping up - 902

29. SLIPPED AND STRUCK AGAINST VEHICLE - 131

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two - surface slipped on

brick walkway - 901
cab - 925
curb - 903
depression - 904
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
loading dock - 914
meter - 924
tailgate - 928
trailer - 929

29. subset two (continued)

obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918
step of veh - 920
truck bed - 921
vehicle - 922
waste on ground - 923
unk surface - 998
other surface - 999

subset three

and struck against back of veh - 101
and struck against blade of veh- 102
and struck against cab door - 104
and struck against edge of hopper - 105
and struck against exhaust pipe - 106
and struck against front of veh - 107
and struck against handle of veh - 108
and struck against hood of veh - 109
and struck against inside of cab - 110
and struck against packing mechanism lever - 111
and struck against radiator cap - 112
and struck against running board - 113
and struck against side of hopper - 114
and struck against side of veh - 115
and struck against steering wheel - 116
and struck against step of veh - 117
and struck against tailgate - 118
and struck against tongue of trailer - 119
and struck against windshield - 120
and struck against trailer ramp - 123
and struck against boom controls - 124
and struck against lift gate - 126
and struck against turnbuckle - 127
and struck against cable - 128
and struck against emptying lever - 129
and struck against mechanical arm - 131
and struck against access door - 132
and struck against safety door - 133
and struck against fender - 134
and struck against dragboard - 135
and struck against gears - 136
and struck against unk veh part - 198
and struck against other veh part - 199

ACCIDENT TYPE CODING LIST (Continued)

30. SLIPPED AND STRUCK AGAINST OBJECT - 132

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

subset two - surface slipped on

brick walkway - 901
chair - 902
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907
ground - 908
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
cab - 925
hopper - 926
loading dock - 914
meter - 924
obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918
stairs - 919
step of veh - 920
truck bed - 921
vehicle - 922
waste on ground - 923
unk surface - 998
other surface - 999

ACCIDENT TYPE CODING LIST (Continued)

30. subset three

and struck against cable - 302
and struck against equipment part - 303
and struck against fence - 306
and struck against garage door - 307
and struck against garbage can rack - 308
and struck against gate - 309
and struck against handtool - 322
and struck against machine part - 310
and struck against nail - 313
and struck against obj handled by coworker - 314
and struck against post - 315
and struck against shovel - 316
and struck against shrubbery - 317
and struck against wall - 319
and struck against wood - 320
and struck against wrench - 321
and struck against unk obj - 398
and struck against other obj - 399

31. SLIPPED AND STRUCK AGAINST CONTAINER - 133

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A/unk - 0

31. subset two - surface slipped on

brick walkway - 901
cab - 925
chair - 902
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
loading dock - 914
meter - 924

ACCIDENT TYPE CODING LIST (Continued)

31. subset two (continued)

obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918
stairs - 919
step of veh - 920
truck bed - 921
vehicle - 922
waste on ground - 923
incinerator pit - 927
tailgate - 928
trailer - 929
unk surface - 998
other surface - 999

subset three

and struck against std metal container - 401
and struck against nonstd metal container - 402
and struck against container lid - 403
and struck against container handled by coworker - 404
and struck against wheeled cart - 405
and struck against tote barrel - 419
and struck against bulk cont (1-10 yd) - 406
and struck against bulk cont (11-25 yd) - 407
and struck against bulk cont (over 25 yd) - 408
and struck against bulk cont lid - 409
and struck against bulk cont handled by coworker - 410
and struck against 300 gal plastic cont - 411
and struck against plastic can - 412
and struck against oil drum - 413
and struck against cardboard box - 414
and struck against crate - 415
and struck against cardboard barrel - 416
and struck against plastic bag - 417
and struck against compressed waste bag - 418
and struck against litter can - 420
and struck against unk cont - 498
and struck against other cont - 499

ACCIDENT TYPE CODING LIST (Continued)

32. SLIPPED AND STRUCK AGAINST WASTE - 134

subset one - condition of surface slipped on

wet - 601
icy - 602
oily - 603
rocky - 604
uneven - 605
collapsing - 606
otherwise slippery - 607
other condition - 699
N/A or unk - 0

subset two - surface slipped on

brick walkway - 901
cab - 925
chair - 902
curb - 903
depression - 904
floor - 905
grass - 906
gravel - 907
ground - 908
hopper - 926
inclined grass - 909
inclined ground - 910
inclined ramp - 911
inclined pavement - 912
ladder - 913
loading dock - 914
meter - 924
obj on ground - 915
obj protruding from ground - 916
pavement - 917
running board - 918
stairs - 919
step of veh - 920
truck bed - 921
vehicle - 922
waste on ground - 923
unk surface - 998
other surface - 999
incinerator pit - 927
tailgate - 928
trailer - 929

subset three

and struck against appliance - 504
and struck against board with nail - 506
and struck against cardboard slats - 507
and struck against furniture - 510
and struck against glass - 511
and struck against hypodermic needle - 513
and struck against other sharp obj - 516

ACCIDENT TYPE CODING LIST (Continued)

32. subset three (continued)

and struck against palm fronds - 517
and struck against piece of metal - 519
and struck against shrubbery-bundled - 523
and struck against shrubbery-unbundled - 524
and struck against waste handled by coworker - 525
and struck against wood - 527
and struck against unk waste - 598
and struck against other waste - 599

33. MADE SUDDEN MOVEMENT - 140

subset one

while stepping down - 901
while stepping up - 902

subsets 2 and 3 = 0

34. MADE SUDDEN MOVEMENT WHILE CATCHING VEHICLE - 151,0,0,0

35. MADE SUDDEN MOVEMENT WHILE CATCHING OBJECT - 152

equipment part - 305,0,0
garage door - 307,0,0
gate - 309,0,0
hand tool - 322,0,0
machine part - 312,0,0
saw - 324,0,0
shovel/fork - 316,0,0
wood - 320,0,0
wrench - 321,0,0
hammer - 311,0,0
unk obj - 398,0,0
other obj - 399,0,0

36. MADE SUDDEN MOVEMENT WHILE CATCHING CONTAINER - 153

subset one

standard metal cont - 401
nonstandard metal cont - 402
container lid - 403
container handled by coworker - 404
tote barrel - 419
wheeled cart - 405
bulk container (1-10 yd) - 406
bulk container (11-25 yd) - 407
bulk container (over 25 yd) - 408
bulk container lid - 409
bulk container handled by coworker - 410

ACCIDENT TYPE CODING LIST (Continued)

36. subset one (continued)

300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardboard box - 414
crate - 415
cardboard barrel - 416
plastic bag - 417
compressed waste bag - 418
litter can - 420
unk container - 498
other container type - 499

subset two

which was full - 1
which was empty - 2
which was unusually heavy - 3
which was heavy due to being full of rocks - 4
which was heavy due to being water filled - 5
which was heavy due to being tightly packed - 6
which was heavy due to being full of yard clippings - 7
which was heavy due to being full of paper - 8
which was heavy due to being full of wood - 9
which had the bottom fall out - 15
which was heavy due to frozen waste - 16
N/A - 0

subset three

and was unusually large - 17
and was slippery (wet) - 18
and had missing handles - 20
and on which the handle broke - 21
and was being handled with other cont - 22
and had the bottom fall out - 15
and had slipped from his hands - 27
and had bounced back from hopper - 29
N/A - 0
and in which the weight shifted - 30
and which was handled with coworker - 31

ACCIDENT TYPE CODING LIST (Continued)

37. MADE SUDDEN MOVEMENT WHILE CATCHING WASTE - 154

subset one

aerosol can - 502
appliance - 504
bottle - 528
cardboard slats - 507
ceramic waste - 529
fiberglass - 508
fluorescent bulb - 509
furniture - 510
mattress - 514
palm fronds - 517
printed matter - 521
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
wood - 527
unk waste - 598
other waste - 599
dead animal - 531
equipment part - 533

subset two

which was ejected from veh - 1001
which was swinging around in hopper - 1002
which fell out of veh - 1003
which fell out of top of cont - 1004
which broke against veh - 1005
which was protruding from veh - 1006
which fell out of bottom of cont - 1007
which had slipped from his hands - 1027
N/A - 0

subset three = 0

38. MADE SUDDEN MOVEMENT WHILE AVOIDING VEHICLE - 161,0,0,0

39. MADE SUDDEN MOVEMENT WHILE AVOIDING OBJECT - 162

animal - 301,0,0
cable - 302,0,0
garage door - 307,0,0
gate - 309,0,0
hand tool - 322,0,0
obj handled by coworker - 314,0,0
saw - 324,0,0
shovel/fork - 316,0,0
shrubbery - 317,0,0
sudden noise - 318,0,0
wrench - 321,0,0
hammer - 311,0,0
unk obj - 398,0,0
other obj - 399,0,0
obj thrown up by moving equipment - 326,0,0

ACCIDENT TYPE CODING LIST (Continued)

40. MADE SUDDEN MOVEMENT WHILE AVOIDING CONTAINER - 163

subset one

standard metal cont - 401
nonstandard metal cont - 402
container lid - 403,0,0
container handled by coworker - 404
tote barrel - 419
wheeled cart - 405
bulk container (1-10 yd) - 406
bulk container (11-25 yd) - 407
bulk container (over 25 yd) - 408
bulk container lid - 409
bulk container handled by coworker - 410
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardboard box - 414
crate - 415
cardboard barrel - 416
plastic bag - 417,0,0
compressed waste bag - 418
litter can - 420
unk container - 498
other container type - 499

subset two

which was full - 1
which was empty - 2
which as unusually heavy - 3
which was heavy due to being full of rocks - 4
which was heavy due to being water filled - 5
which was heavy due to being tightly packed - 6
which as heavy due to being full of yard clippings - 7
which was heavy due to being full of paper - 8
which was heavy due to being full of wood - 9
which had the bottom fall out - 15
which was heavy due to frozen waste - 16
which had protruding shrubbery - 13

subset three

and which was handled with coworker - 31
and had slipped from his hands - 27

41. MADE SUDDEN MOVEMENT WHILE AVOIDING WASTE - 164

subset one

acid - 501
aerosol can - 502
aerosol spray - 503
appliance - 504
bleach - 505
bottle - 528
cardboard slats - 507
ceramic waste - 529
fiberglass - 508
fluorescent bulb - 509
furniture - 510
glass - 511
grass/weeds/leaves - 512
hypodermic needle - 513
mattress - 514
nail - 530
noxious chemical - 515
other sharp obj - 516
palm fronds - 517
particles in waste - 518
piece of metal - 519
poison ivy/oak - 520
printed matter - 521
ammonia - 532
dead animal - 531
equipment part - 533

ACCIDENT TYPE CODING LIST (Continued)

41. subset one (continued)

rocks/concrete/dirt - 522
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
waste handled by coworker - 526
wood - 527
unk waste - 598
other waste - 599

subset two

which was ejected from veh - 1001
which was swinging around in hopper - 1002
which fell out of veh - 1003
which fell out of top of cont - 1004
which fell out of bottom of cont - 1007
which broke against veh - 1005
which was protruding from veh - 1006
which had slipped from his hands - 1027
N/A - 0

subset three - 0

42. OVEREXERTED SELF - 170,0,0,0

43. OVEREXERTED SELF WITH VEHICLE PART - 171

brakes - 103,0,0
cab door - 104,0,0
handle of veh - 108,0,0
hood of veh - 109,0,0
packing mechanism lever - 111,0,0
radiator cap - 112,0,0
steering wheel - 116,0,0
tailgate - 118,0,0
tire - 122,0,0
tongue of trailer - 119,0,0
cab of veh - 121,0,0
trailer ramp - 123,0,0
access door - 132,0,0
turnbuckle - 127,0,0
dragboard - 135,0,0
gears - 136,0,0
unk veh part - 198,0,0
other veh part - 199,0,0

accelerator pedal - 125,0,0
boom controls - 124,0,0
lift gate - 126,0,0
cable - 128,0,0
emptying lever - 129,0,0

ACCIDENT TYPE CODING LIST (Continued)

44. OVEREXERTED SELF WITH OBJECT - 172

cable - 302,0,0
equipment part - 305,0,0
garage door - 307,0,0
gate - 309,0,0
hand tool - 322,0,0
machine part - 312,0,0
saw - 324,0,0
shovel/fork - 316,0,0
wrench - 321,0,0
hammer - 311,0,0
unk obj - 398,0,0
other obj - 399,0,0

45. OVEREXERTED SELF WITH CONTAINER - 173

subset one

standard metal cont - 401
nonstandard metal cont - 402
container lid - 403
tote barrel - 419
wheeled cart - 405
bulk container (1-10 yd) - 406
bulk container (11-25 yd) - 407
bulk container (over 25 yd) - 408
bulk container lid - 409
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardboard box - 414
crate - 415
cardboard barrel - 416
plastic bag - 417
compressed waste bag - 418
litter can - 420
unk container - 498
other container type - 499

subset two

which was full - 1
which was empty - 2
which was unusually heavy - 3
which was heavy due to being full of rocks - 4
which was heavy due to being water filled - 5
which was heavy due to being tightly packed - 6
which was heavy due to being full of yard clippings - 7
which was heavy due to being full of paper - 8
which was heavy due to being full of wood - 9
which was stuck or frozen to the ground - 14
which was heavy due to frozen waste - 16
N/A - 0

ACCIDENT TYPE CODING LIST (Continued)

45. subset three

and was unusually large - 17
and was slippery (wet) - 18
and had missing handles - 20
and was being handled with other cont - 22
and was recessed - 23
and was stuck or frozen to the ground - 14
and became stuck - 28
and was being handled with coworker - 31
N/A - 0

46. OVEREXERTED SELF WITH WASTE - 174

subset one

appliance - 504
cardboard slat - 507
ceramic waste - 592
furniture - 529
grass/weeds/leaves - 512
mattress - 514
palm fronds - 517
printed matter - 521
rocks/concrete/dirt - 522
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
wood - 527
dead animal - 531
equipment part - 533
unk waste - 598
other waste - 599

subset two

which was being handled with coworker - 1031
N/A - 0

subset three - 0

47. WAS CAUGHT BETWEEN OBJECTS - 180

subset one

in steering wheel - 716
in packer blade - 701
in tailgate - 702
in cab door - 703
in packing mechanism lever - 704
in veh handle - 705
between container and wall - 706
between container and veh - 707
between container and edge of hopper - 708
between container and lid - 709
between bulk container and wall - 710
between bulk container and veh - 711
between bulk container and edge of hopper - 712
between bulk container and lid - 713
in hood of veh - 714
in handle of cont - 715
in access door - 717
in safety door - 718
between two objects - 799
in bulk container handle - 719

subset two

N/A - 0
cont was unusually heavy - 1503
cont was heavy (rocks) - 1504
cont was heavy (water) - 1505
cont was heavy (tightly packed) - 1506
cont was heavy (yard clippings) - 1507
cont was heavy (paper) - 1508
cont was heavy (wood) - 1509
cont was heavy (frozen waste) - 1516
cont was unusually large - 1517
cont was wet - 1518
cont handle broke - 1521
cont had the bottom fall out - 1515
cont was falling - 1527
cont had bounced back from hopper - 1529
cont weight shifted - 1530

subset three = 0

ACCIDENT TYPE CODING LIST (Continued)

48. CONTACTED ELECTRIC CURRENT - 190,0,0,0

49. CONTACTED CAUSTIC OR TOXIC SUBSTANCE - 205

battery acid - 1101,0,0
exhaust fumes - 1102,0,0
gasoline - 1103,0,0
grease - 1104,0,0
hydraulic fluid - 1106,0,0
detergent - 1107,0,0
weed killer - 1109,0,0
smoke/fire - 1110,0,0
unk substance - 1198,0,0
other substance - 1199,0,0

50. CONTACTED CAUSTIC OR TOXIC WASTE - 204

acid - 501,0,0
aerosol spray - 503,0,0
bleach - 505,0,0
noxious chemical - 515,0,0
ammonia - 532,0,0
unk waste - 598,0,0
other waste - 599,0,0

51. CONTACTED ALLERGENIC SUBSTANCE - 215

work substance - 1198,0,0
other substance - 1199,0,0

52. CONTACTED ALLERGENIC WASTE - 214

aerosol spray - 503,0,0
noxious chemical - 515,0,0
poison ivy/oak - 520,0,0
unk waste - 598,0,0
other waste - 599,0,0

53. INJURED DUE TO WEATHER EXTREMES - 220,0,0,0

54. CONTACTED HOT VEHICLE PART - 231

exhaust pipe - 106,0,0
radiator cap - 112,0,0
unk veh part - 198,0,0
other veh part - 199,0,0
engine - 130,0,0

55. CONTACTED HOT OBJECT - 232

water hose - 327,0,0
equipment part - 305,0,0
hand tool - 322,0,0
saw - 324,0,0
unk object - 398,0,0
other object - 399,0,0

ACCIDENT TYPE CODING LIST (Continued)

56. CONTACTED HOT SUBSTANCE - 235

    oil - 1104,0,0
    water - 1105,0,0
    hydraulic fluid - 1106,0,0
    steam - 1108,0,0
    unk substance - 1198,0,0
    other substance - 1199,0,0

57. WAS STUNG BY INSECT - 240,0,0,0

58. WAS BIT BY ANIMAL - 250,0,0,0

59. STEPPED ON SHARP OBJECT - 262

    nail - 313,0,0
    glass - 323,0,0
    unk object - 398,0,0
    other object - 399,0,0

60. STEPPED ON SHARP WASTE - 264

    nail - 530,0,0
    glass - 511,0,0
    board with nail - 506,0,0
    piece of metal - 519,0,0
    other sharp object - 516,0,0
    unk waste - 598,0,0
    other waste - 599,0,0

61. WAS INJURED FROM AGGRESSIVE ACT - 270,0,0,0

62. SUSTAINED FLASHBURN - 280,0,0,0

63. DEVELOPED INJURY OVER TIME - 970,0,0,0

64. WAS INJURED IN UNKNOWN ACCIDENT - 980,0,0,0

65. WAS INJURED IN OTHER TYPE OF ACCIDENT - 990,0,0,0

ACTIVITY

1. CARRYING CONTAINER - 13
2. CARRYING WASTE - 14
3. CARRYING OBJECT - 12
4. PUSHING OR PULLING A CONTAINER - 23
5. PUSHING OR PULLING WASTE - 24
6. PUSHING OR UPLLING OBJECT - 22
7. PUSING OR PULLING VEHICLE PART - 21
8. LIFTING TO DUMP CONTAINER - 33
9. LIFTING TO DUMP WASTE - 34
10. LIFTING CONTAINER - 53
11. LIFTING WASTE - 54
12. LIFTING VEHICLE PART - 51
13. LIFTING OBJECT - 52
14. DUMPING CONTAINER - 63
15. DUMPING WASTE - 64
16. DUMPING OBJECT - 62
17. DISLODGING WASTE FROM VEHICLE - 41,0,0
18. DISLODGING WASTE FROM CONTAINER - 43,0,0
19. SHAKING AND DUMPING CONTAINER - 73
20. CATCHING CONTAINER - 83 (IF THROWN BY COWORKER)
21. CATCHING WASTE - 84 (OF FALLING OUT OF HOPPER)
22. ARRANGING LOAD - 90,0,0
23. UNLOADING WASTE - 364
24. COMPACTING WASTE IN VEHICLE - 101
25. COMPACTING WASTE IN CONTAINER - 103
26. DRIVING EQUIPMENT - 111,0,0
27. RIDING ON EQUIPMENT - 121
28. RIDING ON CONTAINER - 123
29. GETTING ON EQUIPMENT - 131
30. GETTING OFF EQUIPMENT - 141
31. OPERATING CONTROLS - 151
32. HOOKING OR UNHOOKING EQUIPMENT - 161
33. HOOKING OR UNHOOKING CONTAINER - 163
34. EMPTYING EQUIPMENT - 171,0,0
35. OPENING EQUIPMENT PART - 181
36. CLOSING EQUIPMENT PART - 191
37. WASHING EQUIPMENT - 201,0,0
38. WASHING CONTAINER - 203
39. DISINFECTING CONTAINER - 273
40. PICKING UP LOOSE WASTE - 214,0,0
41. TRIMMING SHRUBBERY - 224,0,0
42. CLEARING WASTE WITH HANDTOOL - 234,0,0
43. REPAIRING EQUIPMENT WITH HANDTOOL - 241,0,0
44. REPAIRING CONTAINER WITH HANDTOOL - 243,0,0
45. CHECKING EQUIPMENT MALFUNCTION - 251,0,0
46. REFUELING VEHICLE OR ROUTINE MAINTENANCE - 261,0,0
47. DIRECTING VEHICLE - 281,0,0
48. STANDING OR WALKING - 290,0,0
49. DOING OFFICE WORK - 300,0,0
50. DOING JANITORIAL WORK - 310,0,0
51. FIGHTING - 320,0,0
52. DOING HORSEPLAY - 330,0,0
53. RUNNING - 340,0,0
54. MOWING - 350,0,0
55. DOING REPETITIOUS WORK - 960,0,0
56. DOING NO ONE ACTIVITY - 970,0,0
57. DOING UNKNOWN ACTIVITY - 980,0,0
58. DOING OTHER TYPE OF ACTIVITY - 990,0,0

ACTIVITY CODING LIST

(Answer both subsets)

1. Carrying container - 13

    std. metal cont. - 401
    nonstd. metal cont. - 402
    cont. lid - 403
    cont. hndld by cowrkr - 404
    wheeled cart - 405
    bulk cont (1-10 yd) - 406
    bulk cont (11-25 yd) - 407
    bulk cont (>25 yd) - 408
    bulk cont lid - 409
    bulk cont hndld by cowrkr - 410
    300 gal plastic cont - 411
    plastic can - 412
    oil drum - 413
    cardbd box - 414
    crate - 415
    cardbd barrel - 416
    plastic bag - 417
    comprsd waste bag - 418
    tote barrel - 419
    litter can - 420
    unk cont type - 498
    other cont type - 499

2. Carrying waste - 14

    acid - 501
    aerosol can - 502
    aerosol spray - 503
    ammonia - 532
    appliance - 504
    bleach - 505
    board with nail - 506
    cardbd slats - 507
    dead animal - 531
    fiberglass - 508
    fluorescent bulb - 509
    furniture - 510
    glass - 511
    bottle - 528
    yard clippings - 512
    hypodermic needle - 513
    mattress - 514
    noxious chemical - 515
    sharp obj - 516
    palm fronds - 517
    particles in waste - 518
    piece of metal - 519

ACTIVITY CODING LIST (Continued)

2. poison ivy/oak - 520
   printed matter - 521
   rocks/concrete-dirt - 522
   rug - 523
   shrubbery-bundled - 524
   shrubbery-unbundled - 525
   waste hndld by cowrkr - 526
   wood - 527
   ceramic waste - 529
   nail - 530
   unknown waste - 598
   other waste - 599

3. Carrying object - 12

   equip part - 305
   hammer - 311
   shovel/fork - 316
   wrench - 321
   handtool - 322
   saw - 324
   unk object - 398
   other object - 399
   water hose-327

4. Pushing or pulling container - 23

   std metal cont - 401
   nonstd metal cont - 402
   cont lid - 403
   cont hndld by cowrkr - 404
   wheeled cart - 405
   bulk cont (1-10 yd) - 406
   bulk cont (11-25 yd) - 407
   bulk cont (>25 yd) - 408
   bulk cont lid - 409
   bulk cont hndld by cowrkr - 410
   300 gal plastic cont - 411
   plastic can - 412
   oil drum - 413
   cardbd box - 414
   crate - 415
   cardbd barrel - 416
   plastic bag - 417
   comprsd waste bag - 418
   tote barrel - 419
   litter can - 420
   unk cont type - 498
   other cont type - 499

ACTIVITY CODING LIST (Continued)

5. Pushing or pulling waste - 24

acid - 501
aerosol can - 502
aerosol spray - 503
appliance - 504
bleach - 505
board with nail - 506
cardbd slats - 507
fiberglass - 508
fluorescent bulb - 509
furniture - 510
glass - 511
bottle - 528
yard clippings - 512
hypodermic needle - 513
mattress - 514
noxious chemical - 515
sharp obj - 516
palm fronds - 517
particles in waste - 518
piece of metal - 519
poison ivy/oak - 520
printed matter - 521
rocks-concrete/dirt - 522
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
waste hndld by cowrkr - 526
wood - 527
ceramic waste - 529
nail - 530
unknown waste - 598
other waste - 599

ammonia - 532
dead animal - 531

6. Pushing or pulling object - 22

equip part - 305
hammer - 311
shovel/fork - 316
wrench - 321
handtool - 322
saw - 324
unk object - 398
other object - 399

7. Pushing or Pulling Vehicle pt - 21

tongue of trailer - 119
cab of veh - 121
trailer ramp - 123
cable - 128
dragboard - 135
unknown veh part - 198
other veh. part - 199

ACTIVITY CODING LIST

(Answer both subsets)

1. Carrying container - 13

    std. metal cont. - 401
    nonstd. metal cont. - 402
    cont. lid - 403
    cont. hndld by cowrkr - 404
    wheeled cart - 405
    bulk cont (1-10 yd) - 406
    bulk cont (11-25 yd) - 407
    bulk cont (>25 yd) - 408
    bulk cont lid - 409
    bulk cont hndld by cowrkr - 410
    300 gal plastic cont - 411
    plastic can - 412
    oil drum - 413
    cardbd box - 414
    crate - 415
    cardbd barrel - 416
    plastic bag - 417
    comprsd waste bag - 418
    tote barrel - 419
    litter can - 420
    unk cont type - 498
    other cont type - 499

2. Carrying waste - 14

    acid - 501
    aerosol can - 502
    aerosol spray - 503
    appliance - 504
    bleach - 505
    board with nail - 506
    cardbd slats - 507
    fiberglass - 508
    fluorescent bulb - 509
    furniture - 510
    glass - 511
    bottle - 528
    yard clippings - 512
    hypodermic needle - 513
    mattress - 514
    noxious chemical - 515
    sharp obj - 516
    palm fronds - 517
    particles in waste - 518
    piece of metal - 519
    ammonia - 532
    dead animal - 531

ACTIVITY CODING LIST (Continued)

rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
waste handled by co-worker - 526
wood - 527
unk waste - 598
other waste - 599

10. Lifting container - 53

std metal cont - 401
nonstd metal cont - 402
cont lid - 403
cont hndld by cowrkr - 404
wheeled cart - 405
bulk cont (1-10 yd) - 406
bulk cont (11-25 yd) - 407
bulk cont (>25 yd) - 408
bulk cont lid - 409
bulk cont hndld by cowrkr - 410
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardbd box - 414
crate - 415
cardbd barrel - 416
plastic bag - 417
comprsd waste bag - 418
tote barrel - 419
litter can - 420
unk cont type - 498
other cont type - 499

11. Lifting waste - 54

acid - 501
aerosol can - 502
aerosol spray - 503
appliance - 504
bleach - 505
board with nail - 506
cardbd slats - 507
fiberglass - 508
fluorescent bulb - 509
furniture - 510
glass - 511
bottle - 528
yard clippings - 512
hypodermic needle - 513
mattress - 514
noxious chemical - 515

ammonia - 532

dead animal - 531

ACTIVITY CODING LIST (Continued)

sharp obj - 516
palm fronds - 517
particles in waste - 518
piece of metal - 519
poison ivy/oak - 520
printed matter - 521
rocks/concrete/dirt - 522
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
waste hndld by cowrkr - 526
wood - 527
ceramic waste - 529
nail - 530
unknown waste - 598
other waste - 599

12. Lifting Vehicle part - 51

dragboard - 135
cable - 128
trailer ramp - 123
unknown veh. part - 198
other veh. part - 199

13. Lifting object - 52

equip part - 305
hammer - 311
shovel/fork - 316
wrench - 321
handtool - 322
saw - 324
unk object - 398
other object - 399

14. Dumping container - 63

std metal cont - 401
nonstd metal cont - 402
cont lid - 403
cont hndld by cowrkr - 404
wheeled cart - 405
bulk cont (1-10 yd) - 406
bulk cont (11-25 yd) - 407
bulk cont (>25 yd) - 408
bulk cont lid - 409
bulk cont hndld by cowrkr - 410
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardbd box - 414
crate - 415
cardbd barrel - 416
plastic bag - 417
comprsd waste bag - 418
tote barrel - 419
litter can - 420
unk cont type - 498
other cont type - 499

ACTIVITIES CODING LIST (Continued)

15. Dumping waste - 64

acid - 501
aerosol can - 502
aerosol spray - 503
appliance - 504
bleach - 505
board with nail - 506
cardbd slats - 507
fiberglass - 508
fluorescent bulb - 509
furniture - 510
glass - 511
bottle - 528
yard clippings - 512
hypodermic needle - 513
mattress - 514
noxious chemical - 515
sharp obj - 516
palm fronds - 517
particles in waste - 518
piece of metal - 519
poison ivy/oak - 520
printed matter - 521
rocks/concrete/dirt - 522
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
waste hndld by cowrkr - 526
wood - 527
ceramic waste - 529
nail - 530
unknown waste - 598
other waste - 599

ammonia - 532
dead animal - 531

16. Dumping object - 62

equip part - 305
hammer - 311
shovel/fork - 316
wrench - 321
handtool - 322
saw - 324
unk object - 398
other object - 399

ACTIVITY CODING LIST (Continued)

17. Dislodging waste from vehicle- 41,0,0
18. Dislodging waste from cont - 43,0,0
19. Shaking while dumping container - 73

    std metal cont - 401
    nonstd metal cont - 402
    cont lid - 403
    cont hndld by cowrkr - 404
    wheeled cart - 405
    bulk cont (1-10 yd) - 406
    bulk cont (11-25 yd) - 407
    bulk cont (>25 yd) - 408
    bulk cont lid - 409
    bulk cont hndld by cowrkr - 410
    300 gal plastic cont - 411
    plastic can - 412
    oil drum - 413
    cardbd box - 414
    crate - 415
    cardbd barrel - 416
    plastic bag - 417
    comprsd waste bag - 418
    tote barrel - 419
    litter can - 420
    unk cont type - 498
    other cont type - 499

20. Catching container - 83 (if thrown by co-worker)

    standard metal cont - 401
    nonstandard metal cont - 402
    container lid - 403
    container handled by coworker - 404
    tote barrel - 419
    wheeled cart - 405
    bulk container (1-10 yd) - 406
    bulk container (11-25 yd) - 407
    bulk container (over 25 yd) - 408
    bulk container lid - 409
    bulk container handled by coworker - 410
    plastic can - 412
    300 gal plastic cont - 4
    oil drum - 413
    cardboard box - 414
    crate - 415
    cardboard barrel - 416
    plastic bag - 417
    compressed waste bag - 418
    litter can - 420
    unk container - 498
    other container type - 499

ACTIVITY CODING LIST (Continued)

21. Catching waste - 84 (if falling out of hopper)

    acid - 501
    aerosol can - 502
    aerosol spray - 503
    appliance - 504
    bleach - 505
    board with nail - 506
    cardbd slats - 507
    fiberglass - 508
    fluorescent bulb - 509
    furniture - 510
    glass - 511
    bottle - 528
    yard clippings - 512
    hypodermic needle - 513
    mattress - 514
    noxious chemical - 515
    sharp obj - 516
    palm fronds - 517
    particles in waste - 518
    piece of metal - 519
    poison ivy/oak - 520
    printed matter - 521
    rocks/concrete/dirt - 522
    rug - 523
    shrubbery-bundled - 524
    shrubbery-unbundled - 525
    waste hndld by cowrkr - 526
    wood - 527
    ceramic waste - 529
    nail - 530
    unknown waste - 598
    other waste - 599
    ammonia - 532
    dead animal - 531

22. Arranging load - 90,0,0

23. Unloading waste - 364

    acid - 501
    aerosol can - 502
    aerosol spray - 503
    ammonia - 532
    appliance - 504
    bleach - 505
    board with nail - 506
    cardbd slats - 507
    dead animal - 531
    fiberglass - 508
    fluorescent bulb - 509
    furniture - 510

ACTIVITY CODING LIST (Continued)

glass - 511
bottle - 528
yard clippings - 512
hypodermic needle - 513
mattress - 514
noxious chemicals - 515
sharp obj - 516
palm fronds - 517
particles in waste - 518
piece of metal - 519
poison ivy/oak - 520
printed matter - 521
rocks/concrete/dirt - 522
rug - 523
shrubbery-bundled - 524
shrubbery-unbundled - 525
waste hndld by cowrkr - 526
wood - 527
ceramic waste - 529
nail - 530
unknown waste - 598
other waste - 599

24. Compacting waste in veh. 101

truck bed - 921
hopper - 926
trailer - 929
work surface - 998
other surface - 999

25. Compacting waste in container - 103

std metal cont - 401
nonstd metal cont - 402
cont lid - 403
cont hndld by cowrkr - 404
wheeled cart - 405
bulk cont (1-10 yd) - 406
bulk cont (11-25 yd) - 407
bulk cont (>25 yd) - 408
bulk cont lid - 409
bulk cont hndld by cowrkr - 410
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardbd box - 414
crate - 415
cardbd barrel - 416
plastic bag - 417
comprsd waste bag - 418
tote barrel - 419
litter can - 420
unk cont type - 498
other cont type - 499

ACTIVITY CODING LIST (Continued)

26. Driving equipment - 111,0,0

27, Riding on equipment - 121

running board - 918
step of veh - 920
truck bed - 921
vehicle - 922
cab of veh - 925
hopper - 926
unk surface - 998
tailgate - 928
other surface - 999

28. Riding on container - 123

bulk container (1-10 yd) - 406
bulk container (11-25 yd) - 407
bulk container (over 25 yd) - 408
300 gal plastic cont - 411
unk container - 498
other container - 499

29. Getting on equipment - 131

running board - 918
step of veh - 920
truck bed - 921
vehicle - 922
cab of veh - 925
hopper - 926
unk surface - 998
tailgate - 928
other surface - 999

30. Getting off equipment - 141

running board - 918
step of veh - 920
truck bed - 921
vehicle - 922
cab of veh - 925
hopper - 926
unk surface - 998
tailgate - 928
other surface - 999
lift gate - 126
fender - 134

ACTIVITY CODING LIST (Continued)

31. Operating controls - 151

packing mech lever - 111
boom controls - 124
unk veh part - 198
other veh part - 199
gears - 136
lift gate - 126
emptying lever - 129

32, Hooking or unhooking equipment - 161
cable - 128
tongue of trailer - 119
trailer ramp - 123
unk veh part - 198
other veh part - 199

33. Hooking or unhooking container - 163

bulk container (1-10 yd) - 406
bulk container (11-25 yd) - 407
bulk container (over 25 yd) - 408
unk container - 498
other container - 499
300 gal plastic cont - 411

34. Emptying equipment - 171,0,0

35. Opening equipment part - 181

cab door - 104
hood of veh - 109
tailgate - 118
tongue of trailer - 119
cab of veh - 121
unk veh part - 198
other veh part - 199
access door - 132
turnbuckle - 127
safety door - 133
unknown equip. part - 198
other equip. part - 199

ACTIVITY CODING LIST (Continued)

36. Closing equipment part - 191

cab door - 104
hood of veh - 109
tailgate - 118
tongue of trailer - 119
cab of veh - 121
unk veh part - 198
other veh part - 199
access door - 132
turnbuckle - 127
safety door - 133

Unknown equipment part - 198
other equipment part - 199

37. Washing equipment - 201,0,0

38. Washing container - 203

std metal cont - 401
nonstd metal cont - 402
cont lid - 403
cont hndld by cowrkr - 404
wheeled cart - 405
bulk cont (1-10 yd) - 406
bulk cont (11-25 yd) - 407
bulk cont (>25 yd) - 408
bulk cont lid - 409
bulk cont hndld by cowrkr - 410
300 gal plastic cont - 411
plastic can - 412
oil drum - 413
cardbd box - 414
crate - 415
cardbd barrel - 416
plastic bag - 417
comprsd waste bag - 418
tote barrel - 419
litter can - 420
unk cont type - 498
other cont type - 499

39. Disinfecting container - 273

std metal cont - 401
nonstd metal cont - 402
cont lid - 403
cont hndld by cowrkr - 404
wheeled cart - 405
bulk cont (1-10 yd) - 406
bulk cont (11-25 yd) - 407
bulk cont (>25 yd) - 408
bulk cont lid - 409
bulk cont hndld by cowrkr - 410

ACTIVITY CODING LIST (Continued)

39. 300 gal plastic cont - 411
    plastic can - 412
    oil drum - 413
    cardbd box - 414
    crate - 415
    cardbd barrel - 416
    plastic bag - 417
    comprsd waste bag - 418
    tote barrel - 419

    litter can - 420
    unk cont type - 498
    other cont type - 499

40. Picking up loose waste - 214-0-0
41. Trimming shrubbery - 224-0-0
42. Clearing waste with handtool - 234-0-0
43. Repairing equipment with handtool - 241-0-0
44. Repairing container with handtool - 243-0-0
45. Checking equipment malfunction - 521-0-0
46. Refueling vehicle or routine maintenance - 261-0-0
47. Directing vehicle - 481-0-0
48. Standing or walking - 290-0-0
49. Doing office work - 300-0-0
50. Doing janitorial work - 310-0-0
51. Fighting - 320-0-0
52. Doing horseplay - 330-0-0
53. Running - 340-0-0
54. Mowing - 350-0-0
55. Doing repetitious work - 960-0-0
56. Doing no one activity - 970-0-0
57. Doing unknown activity - 980-0-0
58. Doing other type of activity - 990-0-0

BODY POSITION

BENT OVER - 1

JUMPING DOWN - 2

TURNING/TWISTING - 3

LOOKING UP - 4

REACHING - 5

JUMPING OVER - 6

REACHING OVER OBJECT - 7

STEPPING UP - 8

STEPPING DOWN - 9

STEPPING/JUMPING BACK - 10

CATCHING FALLING OBJECT - 11

JUMPING UP - 12

THROWING - 13

UNDER VEHICLE - 14

KICKING - 15

DAY OF WEEK

TIME OF DAY

HOURS PRIOR

DISTRICT

EQUIPMENT #1

EQUIPMENT #2

PART OF VEHICLE BROKEN

0	N/A
1	ENGINE OVERHEATED
2	STEP OF VEH BROKE
3	PACKING MECHANISM MALFUNCTIONED
4	STEERING MECHANISM MALFUNCTIONED
5	HANDLE ON VEH BROKE
6	BRAKES MALFUNCTIONED
7	HYDRAULIC HOSE BROKE
8	GEAR SLIPPED
9	CAB DOOR BROKE
10	PACKING MECH LEVER STUCK
11	TIRE BLEW OUT
12	ACCELERATOR STUCK
13	CHAIN BROKE
14	EXHAUST SYSTEM MALFUNCTION
15	TAILGATE BROKE
16	ELECTRICAL FIRE
17	LIFT GATE MALFUNCTIONED
18	DRIVE SHAFT BROKE
19	EMPTYING LEVER STUCK
20	LATCH BROKE
21	MECHANICAL ARM BROKE
98	UNK VEH MALFUNCTION
99	OTHER VEH MALFUNCTION
22	ENGINE ON FIRE
23	TAILGATE MALFUNCTIONED

VEH MOVEMENT

0	
1	VEH MOVING FORWARD AT CURB
2	VEH MOVING FORWARD IN ST
3	VEH MOVING FORWARD ON HIGHWAY
4	VEH BACKING
5	VEH NOT MOVING
6	VEH STOPPED SUDDENLY
9	NA
7	VEH MADE SUDDEN START

CREW TYPE

0	
1	RESIDENTIAL COLLECTION CREW
2	COMMERCIAL COLLECTION CREW
3	BRUSH CREW
4	DEAD ANIMAL COLLECTION CREW
5	PAPER COLLECTION CREW
6	BULKY WASTE CREW
7	CHEMICAL WASTE COLLECTION CREW
8	ST CLEANING CREW
9	TRANSFER STATION CREW
10	LITTER CREW
11	RES AND COMMERCIAL COMBINED COLLECTION CREW
12	MANUAL SWEEPER CREW
13	LITTER CAN PICKUP CREW
14	BRUSH & BULKY WASTE CREW
98	UNK COLL CREW TYPE
99	OTHER COLL CREW TYPE

CONTAINERS USED

0	
1	BULK CONT COLL
2	MANUAL CONT COLL
3	BULK & MANUAL CONT COLL
4	PLASTIC BAG COLL
8	UNK CONT COLL
9	OTHER CONT COLL

COLLECTION PT

0	
1	BKYD W/O INT CONT
2	BKYD W TUB
3	BKYD W WHEELED CART
4	BKYD W SCOOTER
5	CURBSIDE
6	ALLEY
7	MECHANIZED
8	ALLEY & CURBSIDE
9	
19	CS & BY W TUB
11	CS/BY/BY W TUB/ALLEY
12	BY W TUB/BY W CART
13	CS/ALLEY/BY W TUB
14	CS/BY
15	ALLEY/BY W CART
16	CS/ALLEY/BY W TUB/BY W CART
98	UNK COLL PT
99	OTHER COLL PT

CREW SIZE

HOURLY/TASK

1	HOURLY
2	TASK
9	UNKNOWN
0	NOT APPLICABLE

REGULAR JOB

1	YES
2	NO
9	UNKNOWN
0	NOT APPLICABLE

IN TRAINING/SUPERVISING

0	NOT APPLICABLE
1	IN TRAINING
2	SUPERVISING
3	NEITHER
9	UNKNOWN

PART OF BODY

11	SCALP
12	SKULL
13	BRAIN
20	FACE
21	JAW
22	CHEEK
23	MOUTH
24	FOREHEAD
25	NOSE
26	EARS
27	EYES
30	NECK
41	SHOULDER
42	ARM
43	ELBOW
44	WRIST
45	HAND
46	FINGERS
47	THUMB
50	TRUNK
51	BACK
52	ABDOMEN
53	CHEST
54	HIPS
55	BUTTOCKS
56	GROIN
61	LEG
62	KNEE
63	ANKLE
64	FOOT
65	TOES
70	INTERNAL ORGANS
71	MULTIPLE BODY PARTS
98	UNK BODY PART
99	OTHER BODY PART

NATURE OF INJ

1	AMPUTATION
2	ASPHYXIATION OR DROWNING
3	AVULSION
4	
5	STING
6	BLINDNESS IN 1 EYE
7	BLINDNESS IN BOTH EYES
8	BRUISE
9	BURN FROM HEAT
10	CHEMICAL BURN
11	CONCUSSION
12	INFECTION
13	CUT / PUNCTURE
14	DENTAL INJURY
15	DERMATITIS
16	DISLOCATION
17	ELECTRIC SHOCK
18	OBJECT IN EYE
19	FRACTURE
20	FROSTBITE OR OTHER LOW TEMP EFFECT
21	HEARING IMPAIRMENT
22	HEARING LOSS IN 1 EAR
23	HEARING LOSS IN BOTH EARS
24	HERNIA
25	INFECTION
26	INFLAMMATION OF THE JOINTS
27	NOSEBLEED
28	BLOOD POISONING
29	ABRASIONS
30	SPRAIN OR STRAIN
31	SUNBURN
32	HEAT STROKE,EXHAUSTION OR CRAMPS
33	POISONING OR ALLERGIC REACTION
34	
35	MULTIPLE INJURIES
36	HEART ATTACK
37	TORN CARTILAGE
98	UNKNOWN TYPE OF INJURY
99	OTHER TYPE OF INJURY

WEATHER

0	
1	UNUS HOT
2	UNUS COLD
3	RAINING
4	SNOWING
5	HAILING
6	WINDY
98	UNK WEATHER
99	OTHER WEATHER CONDITION

ENVIRONMENT

0	
1	EXC NOISE
2	EXC GLARE
3	EXC DUST/ASHES
4	EXC VIBR
5	EXC FUMES
6	POOR LIGHT/DARKNESS
7	
8	FIRE/SMOKE
98	UNK ENVIR CONDITION
99	OTHER ENVIR CONDITION

SURFACE

0	
1	WET/MUDDY
2	ICY
3	OILY/GREASY
4	LOOSE OBJ ON GRND
5	OBJ PROTRD FRM GRND
6	LOOSE GRAVEL/SLAG
7	SLIPPERY
8	CHANGE IN LEVEL
9	INCLINE
10	DEPRESSION
11	UNEVEN
12	WASTE ON GRND
98	UNK SURFACE CONDITION
99	OTHER SURFACE CONDITION

30 HARD HAT

1	YES
2	NO/UNKNOWN/NOT APPLICABLE

31 BUMP CAP

1	YES
2	NO/UNKNOWN/NOT APPLICABLE

EXACT SITE

1. ON COLLECTION ROUTE - 100
    - inside cab - 112
    - on step - 113
    - on running board - 115
    - on vehicle - 111
    - on truck bed - 116

    - in midstreet - 121
    - in street at curb - 122
    - in street at back of truck - 123
    - in street at front of truck - 124

    - in midalley - 131
    - in alley at curb - 132
    - in alley at back of truck - 133
    - in alley at front of truck - 134
    - on sidewalk - 144
    - in customer's yard - 141
    - in customer's driveway - 142
    - in customer's residence - 143

2. ENROUTE - 200
    - inside cab - 212
    - on step - 213
    - on running board - 215
    - on truck bed - 216
    - on veh - 211

3. LANDFILL - 300
    - in office/gatehouse - 351
    - in shop/garage - 352
    - in yard - 360

    - inside cab - 312
    - on step - 313
    - on running board - 315
    - on truck bed - 316
    - on veh - 311
    - next to veh - 314
    - inside cab enroute to dump site - 382
    - on running board enroute to dump site - 385
    - on step enroute to dump site - 383
    - on truck bed enroute to dump site - 386
    - enroute to dump site - 380
    - inside cab at dump site - 372
    - on running board at dump site - 375
    - on step at dump site - 373
    - on truck bed at dump site - 376
    - at dump site - 370
    - next to veh at dump site - 374

4. AT INCINERATOR - 400
in office/gatehouse - 451
in shop/garage - 452
in yard - 460

inside cab - 412
on running board - 415
on step - 413
on truck bed - 416
next to veh - 414
on veh - 411

inside cab at dumping floor - 482
on running board at dumping floor - 485
on step at dumping floor - 483
on truck bed at dumping floor - 486
next to veh at dumping floor - 484
on veh at dumping floor - 481
at dumping floor - 480

in plant - 490

5. AT TRANSFER STATION - 500
inside cab - 512
on truck bed - 516
on step - 513
on running board - 515
on veh - 511
next to veh - 514
in yard - 560

6. AT RECYCLING STATION - 600
in office/gatehouse - 651
in shop/garage - 652
in yard - 660

inside cab - 612
on running board - 615
on step - 613
on truck bed - 616
on veh - 611
next to veh - 614

inside cab at dumping area - 682
on running board at dumping area - 685
on step at dumping area - 683
on truck bed at dumping area - 686
on veh at dumping area - 681
next to veh at dumping area - 684
at dumping area - 680

in plant - 690

7. AT HEADQUARTERS - 700
    - in office - 751
    - in shop/garage - 752
    - in yard/parking lot - 760
    - inside cab - 712
    - on running board - 715
    - on step - 713
    - on truck bed - 716
    - on veh - 711
    - next to veh - 714

    - at washrack - 761
    - at refueling station - 762

8. IN ROADWAY/FIELD - 800

9. UNKNOWN SITE - 000

10.OTHER SITE - 900

EXHIBIT 22

INJURY CODING FORM

TAPE
SIDE
DATE

User			Date	7			S S #						Name				Day	Time		Barr	Prior		District			No employee on file		
	Equip #1				Equip #2				veh pt brake	Acc type		subject #1		subject #2		subject #3		site		[illegible]	[illegible] type		[illegible]	sub pt	size			
WT	Reg	[illegible]	Pt, Body		Nature		Activity		Subject #1		subject #2		Body	position	weather		environment		surface		hd hat 1	bump 2	glasses 3	goggles 4	ear 5			
skill pd 6	[illegible] 7	repair 8	uniform 9	fire 10	traffic 11	glasses 12	boots 13	[illegible] 14	rain 15	hyp pd 16	chaps 17	other 99	inform 1	horseplay 2	haste 3	alcohol 4	smoking 5	watch 6	avoid 7	fatigue 8	[illegible] 9	[illegible] 10	por op	[illegible]	severity	[illegible]	Entered	

TAPE
SIDE
DATE

User			Date	7			S S #						Name				Day	Time		Barr	Prior		District			No employee on file		
	Equip #1				Equip #2				veh pt brake	Acc type		subject #1		subject #2		subject #3		site		[illegible]	[illegible] type		[illegible]	sub pt	size			
WT	Reg	[illegible]	Pt, Body		Nature		Activity		Subject #1		subject #2		Body	position	weather		environment		surface		hd hat 1	bump 2	glasses 3	goggles 4	ear 5			
skill pd 6	[illegible] 7	repair 8	uniform 9	fire 10	traffic 11	glasses 12	boots 13	[illegible] 14	rain 15	hyp pd 16	chaps 17	other 99	inform 1	horseplay 2	haste 3	alcohol 4	smoking 5	watch 6	avoid 7	fatigue 8	[illegible] 9	[illegible] 10	por op	[illegible]	severity	[illegible]	Entered	

TAPE
SIDE
DATE

User			Date	7			S S #						Name				Day	Time		Barr	Prior		District			No employee on file		
	Equip #1				Equip #2				veh pt brake	Acc type		subject #1		subject #2		subject #3		site		[illegible]	[illegible] type		[illegible]	sub pt	size			
WT	Reg	[illegible]	Pt, Body		Nature		Activity		Subject #1		subject #2		Body	position	weather		environment		surface		hd hat 1	bump 2	glasses 3	goggles 4	ear 5			
skill pd 6	[illegible] 7	repair 8	uniform 9	fire 10	traffic 11	glasses 12	boots 13	[illegible] 14	rain 15	hyp pd 16	chaps 17	other 99	inform 1	horseplay 2	haste 3	alcohol 4	smoking 5	watch 6	avoid 7	fatigue 8	[illegible] 9	[illegible] 10	por op	[illegible]	severity	[illegible]	Entered	

EXHIBIT 23

IRIS USERS WAGE CONTINUATION BENEFITS
FOR ON-THE-JOB INJURIES

User No.	WORKER'S COMPENSATION				INJURY LEAVE		SICK LEAVE	VACATION LEAVE
	Waiting Period	Retroactive Period	% of Salary	Receives Supplement Yes or No	% of Salary	Number of Days Inj.Leave/ W.C. Supplement	Yes or No	Yes or No
101	0	0	0%	No	100%	unlimited	Yes	Yes
103	3 days	14 days	80%	No	100%	250/0	Yes	No
109	3 days	3 days	67%	No	100%	250/0	Yes	Yes
111	3 days	21 days	67%	No	100%	250/0	Yes	Yes
113	3 days	14 days	67%	No	-	-	No	Yes
115	7 days	14 days	60%	No	-	-	Yes	No
125	0	0	67%	No	-	-	Yes	No
133	3 days	15 days	80%	Yes	-	0/90	Yes	Yes
136	7 days	28 days	67%	No	100%	90/0	Yes	No
140	7 days	21 days	67%	Yes	-	0/250	No	No
146	7 days	15 days	60%	Yes	-	0/accrued S.L.	Yes	No
148	7 days	14 days	67%	Yes	-	-/unlimited	Yes	Yes
149	8 days	8 days	67%	No	80%	250/0	Yes	No
152	7 days	7 days	67%	Yes	100%	7/125	No	No
157	7 days	14 days	67%	Yes	100%	7/250	No	No
161	7 days	7 days	67%	No	-	-	Yes	No
170	-	-	-	No	100%[a]	(a)	No	No
171	-	-	-	No	100%	unlimited	No	No
172	7 days	13 days	67%	Yes	100%	7/250	No	No
178	7 days	28 days	67%	No	100%	90/0	Yes	No
179	7 days	14 days	67%	No	100%	125/0	Yes	No
181	7 days	7 days	67%	No	100%	60/0	No	No

(a)Can go to 50% after 6 months.

IRIS USERS WAGE CONTINUATION BENEFITS FOR ON-THE-JOB INJURIES

User No.	WORKER'S COMPENSATION				INJURY LEAVE		SICK LEAVE	VACATION LEAVE
	Waiting Period	Retroactive Period	% of Salary	Receives Supplement Yes or No	% of Salary	Number of Days Inj.Leave/ W.C. Supplement	Yes or No	Yes or No
182	5 days	5 days	67%	No	-	-	Yes	Yes
183	5 days	5 days	67%	No	100%	125/0	No	Yes
186	7 days	42 days	67%	No	100%	5/0	Yes	Yes
191	7 days	42 days	67%	No	-	-	Yes	No
197	7 days	7 days	67%	No	100%	5/0	Yes	Yes
201	7 days	7 days	67%	Yes	-	0/accrued S.L.	Yes	Yes
204	7 days	14 days	67%	Yes	-	0/accrued S.L.	Yes	Yes
207	3 days	21 days	67%	No	100%	250/0	No	No
210	3 days	21 days	67%	No	100%	60/0	No	No
211	3 days	3 days	67%	No	100%	3/0	No	No
215	7 days	21 days	67%	Yes	100%	7/30	Yes	Yes
217	7 days	28 days	67%	No	100%	90/0	No	No
221	0	0	90%	No	-	-	Yes	Yes
226	7 days	49 days	85%	Yes	-	0/accrued S.L.	Yes	Yes
235	7 days	28 days	67%	No	100%	125/0	No	No
236	7 days	28 days	67%	No	-	-	Yes	Yes
237	3 days	10 days	67%	Yes	100%	3/unlimited	No	No
242	7 days	21 days	67%	No	100%	250/0	Yes	No
244	3 days	21 days	67%	Yes	100%	unlimited	No	No
260	3 days	21 days	67%	Yes	100%	250/accrued SL	No	No
265	3 days	21 days	67%	No	-	-	Yes	Yes
272	7 days	14 days	67%	No	-	-	Yes	Yes

IRIS USERS WAGE CONTINUATION BENEFITS
FOR ON-THE-JOB INJURIES

User No.	WORKER'S COMPENSATION				INJURY LEAVE		SICK LEAVE	VACATION LEAVE
	Waiting Period	Retroactive Period	% of Salary	Receives Supplement Yes or No	% of Salary	Number of Days Inj.Leave/ W.C. Supplement	Yes or No	Yes or No
275	7 days	7 days	67%	Yes	-	0/accrued S.L.	Yes	Yes
283	7 days	90 days	70%	5%	-	0/5 yr.	No	No
286	3 days	21 days	67%	No	-	-	Yes	No
292	0	0	75%	Yes	-	0/unlimited	No	No
295	7 days	7 days	67%	Yes	100%	250/500 weeks	No	No
296	3 days	21 days	67%	No	100%	125/0	No	No
299	5 days	5 days	67%	Yes	-	0/accrued S.L.	Yes	Yes
316	0	0	75%	Yes	-	0/accrued S.L.	Yes	No
318	7 days	7 days	67%	No	-	-	Yes	Yes
323	6 days	6 days	67%	Yes	-	0/accrued S.L.	Yes	No
324	3 days	14 days	50%	No	-	-	No	No
325	3 days	-	67%	8%	100%	3/accrued S.L.	Yes	Yes
326	7 days	14 days	67%	Yes	100%	7/120	Yes	No
328	7 days	7 days	67%	Yes	100%	7/120	Yes	Yes
329	3 days	21 days	67%	No	-	-	No	Yes
330	7 days	28 days	67%	No	100%	7/0	No	No
331	3 days	3 days	67%	Yes	100%	3/30	Yes	Yes
333	2 days	2 days	60%	Yes	-	0/accrued S.L.	Yes	Yes
336	3 days	5 days	67%	No	-	-	No	Yes
337-339	-	-	-	No	100%	unlimited	No	No
340	7 days	7 days	67%	No	100%	250/0	No	No

IRIS USERS WAGE CONTINUATION BENEFITS
FOR ON-THE-JOB INJURIES

User No.	WORKER'S COMPENSATION				INJURY LEAVE		SICK LEAVE	VACATION LEAVE
	Waiting Period	Retroactive Period	% of Salary	Receives Supplement Yes or No	% of Salary	Number of Days Inj.Leave/ W.C. Supplement	Yes or No	Yes or No
341	3 days	21 days	67%	Yes	-	0/60	Yes	Yes
343	3 days	21 days	67%	No	-	-	Yes	No
344	7 days	14 days	67%	Yes	-	0/125	No	No
345	7 days	14 days	67%	Yes	100%	5/accrued S.L.	Yes	No
346	7 days	21 days	67%	Yes	-	0/7 accr. S.L.	Yes	Yes
347	7 days	13 days	67%	No	100%	60/0	No	Yes
348	3 days	21 days	67%	Yes	100%	3/unlimited	No	No
349	3 days	14 days	67%	No	-	-	No	Yes
350	3 days	21 days	67%	No	-	-	Yes	Yes
351	3 days	21 days	67%	No	50%	3/0	Yes	No
352	7 days	21 days	67%	No	-	-	Yes	No
353	3 days	7 days	75%	Yes	100%	3/unlimited	No	No
354	7 days	28 days	66%	Yes	100%	7/unlimited	No	No
355	3 days	3 days	50%	No	-	-	No	No
358	-	-	-	No	100%	unlimited	No	No
359	3 days	28 days	67%	No	-	-	No	No
361	3 days	-	67%	Yes	100%	3/accrued S.L.	Yes	Yes
362	7 days	14 days	60%	Yes	-	0/accrued S.L.	Yes	Yes
363	7 days	14 days	60%	No	100%	7/0	No	Yes(b)

(b)Mav use vacation after 60 days.

EXHIBIT 24

IRIS
EQUIPMENT DATA UPDATE LIST

DATE: SEPTEMBER 1, 1977
IRIS USER: FOX VALLEY DISP.(WM),(AURORA,IL) - 113

EQUIPMENT NUMBER	TYPE OF USE	HRS/ DAY	DAYS/ WEEK	WKS/ YEAR	TONS/ DAY	MI/ DAY	DATE OF CHANGE
33	GARAGE USE	5	5	52	0	75	---------
36	RESIDENTIAL COLLECTION	5	5	52	0	75	---------
37	RESIDENTIAL COLLECTION	4	0	0	0	0	---------
38	COMMERCIAL COLLECTION	8	5	52	80	100	---------
39	COMMERCIAL COLLECTION	8	5	52	80	100	---------
4	OFFICE & YARD USE	5	6	52	0	75	---------
40	COMMERCIAL COLLECTION	8	5	52	20	70	---------
41	RESIDENTIAL COLLECTION	0	0	0	0	0	---------
42	RESIDENTIAL COLLECTION	0	0	0	0	0	---------
43	COMMERCIAL COLLECTION	8	5	52	80	100	---------
44	COMMERCIAL COLLECTION	8	5	52	80	100	---------
45	RESIDENTIAL COLLECTION	0	0	0	0	0	---------
46	RESIDENTIAL COLLECTION	8	6	52	20	120	---------
47	COMMERCIAL COLLECTION	8	6	52	20	75	---------
48	COMMERCIAL COLLECTION	8	6	52	80	100	---------
49	COMMERCIAL COLLECTION	8	5	52	80	125	---------
5	GARAGE USE	2	6	52	0	20	---------
50	COMMERCIAL COLLECTION	8	5	52	15	70	---------
51	RESIDENTIAL COLLECTION	8	5	52	20	100	---------
52	COMMERCIAL COLLECTION	8	6	52	25	100	---------
53	COMMERCIAL COLLECTION	8	5	52	25	100	---------
54	GARAGE USE	2	3	52	0	50	---------
55	COMMERCIAL COLLECTION	0	0	0	0	0	---------
56	COMMERCIAL COLLECTION	8	5	52	20	100	---------
57	RESIDENTIAL COLLECTION	8	5	52	20	125	---------
58	RESIDENTIAL COLLECTION	8	5	52	20	75	---------
6	GARAGE USE	2	5	52	0	20	---------

BIBLIOGRAPHY

I

SPEECHES ON IRIS AND SOLID WASTE SAFETY

1. Ms. King spoke at the National Safety Council Congress for the Refuse Collection & Disposal Division, Chicago, Illinois, October 1974.

2. Ms. King spoke at both the Northern and Sourthern Conference of the New Jersey Safety Council on solid waste safety, Middlesex and Cherry Hill, New Jersey, February 1975.

3. Ms. King spoke at the American Public Works Association Annual Congress for the Solid Waste Institute in New Orleans, June 1975.

4. Ms. King spoke at a meeting of the California City Safety Management Association on solid waste safety, Los Angeles, June 1975.

5. Speaker at a 4-hour seminar on how to develop and use accident statistics, for the California Correctional System, Modesto, June 1975.

6. Ms. King was the key speaker at a safety seminar sponsored by Environmental Protection Agency and the National League of Cities, August 1975.

7. Ms. King spoke at the National Safety Council Congress for the Refuse Collection & Disposal Division, Chicago, Illinois, October 1975.

8. Ms. King spoke at the Governmental Refuse Collection and Disposal Association Annual Meeting, Los Angeles, 1975.

9. Speaker on "Current Research in Safety" before the entire National Safety Congress, October 1976.

10. Ms. King spoke at the Tenth Annual Risk Management Seminar sponsored by University of Arizona, Tucson, Arizona, February 1977.

11. Dr. Dobson spoke at the Western Safety Conference sponsored by GRCDA, Anaheim, California, May 1977.

12. Ms. Reiley spoke at the Los Angeles Regional Forum on Solid Waste Management, Long Beach, CA, May 1977.

13. Ms. King spoke at the University of Wisconsin Extension's Safety in Solid Waste Collection, Milwaukee, Wisconsin, June 1977.

14. Ms. Reiley conducted three solid waste accident prevention work shops in St. Petersburg, FL, Buffalo, NY, and Des Moines, IA which were attended by solid waste safety personnel in June 1977.

15. Ms. King spoke at the 1977 International Public Works Congress and Equipment Show, Chicago, Illinois, September 1977.

16. Ms. King and Ms. Reiley spoke at the National Safety Congress for the Refuse Collection and Disposal Division, Chicago, Illinois, October 1977.

17. Ms. King spoke on "Solid Waste Collection Safety" before the University of Wisconsin Extension, Madison, Wisconsin, December 1977.

18. Ms. King spoke at the Southwest Safety Congress & Exposition in Phoenix, Arizona, April 1978.

19. Ms. Reiley spoke on "How to Keep and Analyze Injury Statistics" for Oklahoma State University sponsored by NSC and GRCDA, Oklahoma City, April 1978.

III

	Start Up	Drop Out	Start Up	Drop Out
221	9/01/76	continuing		
226	10/01/76	3/31/77		
235	3/01/76	6/30/77		
236	12/01/75	9/30/77		
237	3/01/76	9/30/77		
242	1/01/76	3/31/77		
244	2/01/76	9/30/77		
260	1/01/76	3/31/77		
261	12/01/75	12/31/76		
265	1/01/76	9/30/77		
272	2/01/76	9/30/77		
275	6/01/76	9/30/77		
283	3/01/76	3/31/77		
285	3/01/76	6/30/76		
286	2/01/76	9/30/77		
292	3/01/76	9/30/77		
295	2/01/76	12/31/76		
296	3/01/76	9/30/77		
299	10/01/76	9/30/77		
316	5/01/76	continuing		
318	7/01/76	9/30/77		
323	10/01/76	3/31/77		
324	4/01/76	9/30/77		
325	5/01/76	9/30/77		
326	8/01/76	9/30/77		
328	10/01/76	9/30/77		
329	6/01/76	9/30/77		
330	6/01/76	9/30/77		
331	7/01/76	9/30/77		
333	8/01/76	9/30/77		
336	10/01/76	9/30/77		
337	8/01/76	continuing		
338	8/01/76	continuing		
339	8/01/76	continuing		
340	10/01/76	3/31/77		
341	8/01/76	9/30/77		
343	8/01/76	9/30/77		
344	10/01/76	9/30/77		
345	10/01/76	9/30/77		
346	10/01/76	3/31/77		
347	10/0o/76	9/30/77		
348	10/01/76	9/30/77		
349	10/01/76	9/30/77		
350	10/01/76	9/30/77		
351	10/01/76	9/30/77		
352	1/01/77	3/31/77		
353	10/01/76	9/30/77		
354	10/01/76	9/30/77		

IV

IRIS USER PARTICIPATION

	Start Up	Drop Out	Start Up	Drop Out
101	10/01/73	4/30/75	12/01/75	9/30/77
102	8/01/73	6/30/75		
103	8/01/73	2/28/75	10/01/76	continuing
104	1/01/74	12/31/75		
106	10/01/73	9/30/74		
108	9/01/73	6/30/74		
109	8/01/73	8/31/74	12/01/75	9/30/77
110	9/01/73	9/30/74		
111	9/01/73	5/31/75	12/01/75	continuing
113	1/01/74	12/31/74	10/01/76	9/30/77
114	7/01/73	6/30/74		
115	10/01/73	9/30/74	10/01/76	3/31/77
116	9/01/73	8/31/74		
118	9/01/73	3/31/75		
119	1/01/74	12/31/74		
125	1/01/76	continuing		
129	1/01/76	3/31/76		
133	11/01/76	9/30/77		
136	12/01/75	9/30/76		
140	2/01/76	6/30/76		
146	1/01/76	continuing		
148	5/01/76	9/30/77		
149	10/01/76	9/30/77		
152	10/01/76	9/30/77		
157	10/01/76	3/31/77		
161	12/01/75	3/31/77		
170	10/01/76	9/30/77		
171	1/01/76	9/30/77		
172	1/01/76	continuing		
178	10/01/76	3/31/77		
179	9/01/76	9/30/77		
181	1/01/76	continuing		
182	10/01/76	9/30/77		
183	10/01/76	9/30/77		
186	2/01/76	9/30/77		
191	1/01/76	9/30/77		
197	7/01/76	9/30/77		
201	10/01/76	9/30/77		
204	1/01/76	3/31/77		
207	12/01/75	12/31/77		
210	12/01/75	9/30/77		
211	12/01/75	9/30/77		
212	12/01/75	6/30/76		
215	1/01/76	9/30/77		
217	4/01/76	9/30/77		

	Start Up	Drop Out	Start Up	Drop Out
355	10/01/76	9/30/77		
358	10/01/76	9/30/77		
359	10/01/76	12/31/76		
361	10/01/76	3/31/77		
362	10/01/76	9/30/77		
363	11/01/76	9/30/77		

μσ1705b
SW-169c.1

☆U.S. GOVERNMENT PRINTING OFFICE: 1979-281-147/13